AMATEUR RADIO

APRIL 1965

Vol. 33, No. 4

2/6

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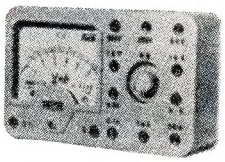

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OUR COVER

A scene following the disastrous Victorian fires. Photo from "The Herald," Melbourne.

FEDERAL COMMENT

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FEDERATION—WHAT DOES IT MEAN?

The present proposal for the Federation of the Divisions of the Wireless Institute of Australia is the concern of each and every individual member and warrants deep thought by Divisions before ratification when it will become binding on all. A step as important as this one should not be entered upon in haste for on its adoption will hinge the future growth of the Institute.

Two major proposals were submitted—the first, the concept of a Federal body, similar to the R.S.G.B. and the A.R.R.L., to which any Australian Amateur could become a member irrespective of the present Divisional boundaries. The second alternative was that of the present Divisions, as autonomous bodies, belonging to a Federal company, each as individual members.

For the last three years, this matter has been seriously under consideration and the second alternative was adopted by the Federal Council as the one which would meet the majority of members' wishes. The first alternative was such a radical departure from the existing organisation that Divisions were reluctant to consider it in great detail. The second proposal however, being closer to the present organisation, was considered in much greater detail and over the last few Conventions modifications and amendments have been made to suit the majority.

The Convention will be held again this month during Easter in Melbourne and once again, items dealing with the new Constitution will form the bulk of the agenda items. Divisional Councils in the States have had different approaches to the method whereby they "sound" the feelings of their members. Some wish to circulate a copy of the final draft to every member while others believe this is a matter which should be left to the Divisional Council to consider.

One thing that all Divisions would agree on is that the interests of the members' equity in their present Divisions will be safeguarded and the Federal Councillor will eventually speak for his whole Division when the time comes. But what is the average member doing about it? Is he prepared to leave these mundane tasks to his Council or does he wish to wade through the draft and make his own comments?

Whichever category you fit into, your answer is, do something now or let it "ride". If you are a "do-er", see your Divisional Council and ask to see the draft or find out what they propose doing about the Constitution —but if you are a "rider", go back to your shack, work some DX and forget the whole matter.

If you value your hobby and the strength and growth of the Institute so that it may better represent your individual views when needed, we believe that there should be very few "riders" and a lot of "do-ers". Although the Constitution is perhaps the most important Institute matter to be considered for many years, it is not one that can be allowed to drift on forever, so ACT now!

FEDERAL EXECUTIVE, W.I.A.

CONTENTS

The Amateurs' Part in the Gippsland Fires 2
W.I.C.E.N. in Victoria—The Background 3
A Low Efficiency Transmitter for 80 Metres 5
The Swiss Quad 6
Six-Metre Transceiver 15
The Crystal Checker 17
DX-pedition to Norfolk Island (VK9TL) 9
The Historical Development of Radio Communication, Part 5 .. 13
Call Signs 5
Wavelength of Ten Miles 5
From Our Reading 19
New Call Signs 19
Statistics 19
Back Issues of "A.R." 17
"CQ" World-Wide S.s.b. Contest 21
DX 21
Federal and Divisional Monthly News Reports 24
Publications Committee Reports .. 20
SWL 20
VHF 23
Youth Radio Clubs 21

THE AMATEURS' PART IN THE GIPPSLAND FIRES

OVER 80 Victorian Amateurs were part of the vast army that fought the recent disastrous fires at Gippsland in Victoria. Over 60 of these Amateurs were actually in the fire area, the remainder manning base stations. A total of 40 private cars equipped with 146 megacycle f.m. equipment or 80 metre equipment were used at one time or another. The Amateurs' role in these fires lasted for eight days.

By Wednesday, 3rd March, 1965, fires had been burning in heavily timbered country in the Gippsland hills for nearly a fortnight. Until that time the fires had posed no serious threat to persons or property. However, on that day the joint State Co-ordinators of the Victorian W.I.C.E.N. Organisation, John Battrick (VK3OR) and Michael Owen (VK3ZEO), were advised by the Liaison Officer of the State Disaster Plan that the fires in the Gippsland hills were causing grave concern and that the State Disaster Plan could be involved, requiring W.I.C.E.N. assistance.

Simultaneously the local P.M.G. Divisional Engineer (who is directly responsible for communications in the area) was contacting the Eastern Zone W.I.C.E.N. Co-ordinator, Graham Collie (VK3QZ). Thereafter the Zone and the State Co-ordinators were in close contact with each other and with P.M.G. Officers in the area and in Melbourne. At the same time metropolitan and country W.I.C.E.N. operators were alerted. Even at that early stage it was clear that the immense communication problem posed by fire that could stretch for over 60 miles could only be met by a heavy commitment of Amateurs from the metropolitan and other zones not directly involved.

On the following day, Thursday, 4th March, further discussions took place, the Zone and State Co-ordinators being kept constantly informed of developments in the situation. On the Thursday afternoon it was decided that a nucleus of a net should be established by establishing base stations at the two places selected to be base headquarters, Heyfield and Bairnsdale. As well, the Institute's official station VK3WI and the Zone Co-ordinator's home station were also to be manned. Therefore in the early evening of that Thursday the first group of four Amateurs from the metropolitan area was on its way to the area, 180 miles away, to assist zone members establishing these base stations. With this first group was the W.I.C.E.N. State Controller, Harold Hepburn (VK3AFQ). He was one of those to remain in the area for the whole of the emergency, and for most of the period was to bear much of the responsibility for the operation in the area.

The plan was to establish these base stations with a minimum commitment of personnel and equipment, to form the nucleus of a net if a heavier commitment was needed. These stations were in operation by early Friday.

By Friday lunch time the situation had deteriorated so much that the W.I.C.E.N. Organisation was requested to provide mobile units to be attached to the two base headquarters.

That afternoon the first group of mobiles left the metropolitan area and were the first of a large number of mobile units to ultimately be utilised.

Those that assisted came from all over Victoria. Lack of sleep was an occupational hazard. Food and drink varied from the lavish to the breadline. Showers and even decent washes were dreams rather than realities, and danger was always very near.

In the eight days that the emergency lasted and W.I.C.E.N. was employed, a total of four disaster headquarters were manned. The first two were at Heyfield and Bairnsdale and the tasks undertaken consisted in the main of accompanying water tankers and fire carts to the fire fronts and providing them with a speedy and reliable means

Mrs. Young and her son. She was taken through fire ravaged roads by ambulance from Ensay to Bairnsdale after W.I.C.E.N. had carried the message. She arrived at hospital in time for the birth.

—Photo courtesy "Bairnsdale Advertiser"

of passing situation reports and requests for further assistance back to the main plotting table at headquarters. This, in turn, facilitated a quick appreciation of the total fire situation in the whole area and was part of the vital communications function in enabling the co-ordination of all the available resources to provide assistance where it was most needed.

On one occasion two W.I.C.E.N. operators travelling in a car were trapped near a bridge over a river with fires on either side of the river. The operators jumped to the river, but even there found that their hair was singed, though of course it could be quickly doused. The bridge was sprayed by a fire-tanker and the operators were able to resume their tasks.

Another incident that many operators recalled was when the W.I.C.E.N. station established at Ensay sent a message to the disaster headquarters at Lucknow that the birth of a baby was imminent. The roads to Ensay were cut, medical assistance was needed and an immediate blood transfusion was a possibility. The Bairnsdale Medical Clinic was contacted and further information was obtained through the Amateur networks. A St. John Ambulance was ultimately successful in negotiating the roads to Ensay and the mother was brought back to Bairnsdale.

By the evening of Sunday, 7th March, the fires in the Bairnsdale and Heyfield areas had been confined. The town of Bairnsdale was safe. Accordingly the Heyfield disaster headquarters and its associated W.I.C.E.N. operators were transferred to Bruthen. This small township is about 15 miles north of Bairnsdale and was at the time still surrounded by fire. At various times fire had cut the Bairnsdale-Bruthen road, the Omeo-Bruthen road, and the Buchan-Bruthen road and at one time, on Saturday morning, had entered Bruthen township itself, destroying some eight houses.

Since this town was strategically placed at the junction of both the road system in the area and the P.M.G. trunk line systems, it became of great importance. From Monday, 8th March, until it rained on the following Friday, the fight to save Bruthen became a continual battle and the fires were never far from the town.

On several occasions W.I.C.E.N. operators found themselves isolated as the winds fanned smouldering fires into blazes and first this and then that road was temporarily blocked by flames and falling trees.

The confluence of trunk telephone lines at Bruthen and the successful quelling of fires around Bairnsdale led to a new role for W.I.C.E.N. It became its task to provide an alternative means of communication while the P.M.G. lines were being restored after being cut by fire or falling trees and during this period many urgent personal messages were carried to the homes of many people.

With Bruthen as the base station, additional stations were set up at Ensay and Tambo Crossing (about 40 miles to the north of Bruthen), at Orbost (some 40 miles to the east), and at Gelantipy away to the north-east of Bruthen. These four stations were roughly in the form of a square and a 24-hour watch on 3550 kilocycles was kept to ensure no loss of vital communications when telephone lines were cut.

This role was a dramatic change from the surprisingly adventuresome job of providing communications to the fire front and most operators found the transition to the frankly irksome job of watch-keeping a difficult one.

Fire fighting and fire spotting was transferred to Gelantipy, where a small force of four mobile units operated for about three days in the wild bush country near the Snowy River. The fires had started in this area, and it is hoped, will finish there.

(Continued on Page 3)

W.I.C.E.N. IN VICTORIA—THE BACKGROUND

THE starting point of the W.I.C.E.N. Organisation in Victoria, as it exists today, was undoubtedly the disastrous fires in the Dandenong Ranges in January, 1962. There a small number of Victorian Amateurs were pressed into service and were able to use the v.h.f. f.m. mobile equipment obtained through the Victorian Division's disposals committee.

Up to that time W.I.C.E.N. was little more than a name. It formed no part of any larger overall organisation, had no official recognition, and generated little enthusiasm.

As a result of these fires, the State Disaster Plan was developed in the years that followed and W.I.C.E.N. became part of that Plan. The broad concept of the State Disaster Plan was to co-ordinate all the services that would be involved in a major disaster and, in particular, to enable the service which was directly responsible for dealing with the emergency to deal with it effectively with as much assistance as is possible.

As well as its normal police function, the Victoria Police became responsible for the ultimate co-ordination of all the services used and the Chief Commissioner of Police became the chairman of the State's Disaster Committee. Other members of the committee were responsible for equipment, medical assistance, communications and welfare.

Communications became the responsibility of Mr. H. S. Robertson, of the Postmaster General's Department. As well as the resources of that Department, W.I.C.E.N. became responsible for providing radio communications. It was decided at an early stage that its activities should centre around net operations on two frequencies, 3550 Kc. a.m. and 145.854 Mc. f.m.

Very strenuous efforts were made by the Victorian Division to obtain as much suitable equipment as possible in order to foster mobile net operation on a day to day basis, to enrol sufficient operators, and to conduct suitable exercises for W.I.C.E.N. operators, both alone and in conjunction with other organisations involved in the State Disaster Plan.

It was basic to the thinking of the Victorian W.I.C.E.N. Organisation that interest should be maintained over a long period. To this end repetitious practice nets were avoided completely. Heavy reliance was placed on large scale and intrinsically interesting exercises once or twice a year. At all times the closest possible liaison was maintained with the P.M.G. Officers responsible for co-ordinating the communications of the Plan.

The first exercise was constructed around a two-day car trial in September 1963. W.I.C.E.N. activities were watched by the P.M.G. Co-ordinators of the State Disaster Plan and this exercise enabled a good assessment of both the strengths and weaknesses of the W.I.C.E.N. system then operative. It also emphasised to the authorities the potential of the Amateur body for emergency communications. They appreciated the significance of a competent body of operators, all volunteers, who could both operate and maintain their own equipment, whose hobby was communications and who were, within themselves, both highly organised and self-disciplined.

Over the succeeding year several more exercises were held in conjunction with the State Disaster Plan built around simulated emergencies and each time W.I.C.E.N. was found to be better equipped, better manned and in every sense more capable of coping with the demands that were made of it.

One of the most important decisions made during this period was to form a striking force of six mobiles whose operators were able to obtain their employers' permission to be available at any time for emergency work. It was (and still is) the job of this small task force to be the first to the scene of any disaster where W.I.C.E.N. assistance is required and to start operation as soon as possible. If the particular incident called for additional operators and equipment then all available means could be used to summon, brief and deploy these additional personnel.

This second phase was co-ordinated by VK3WI on the net frequencies and by telephone.

This was the planning behind the large scale utilisation of W.I.C.E.N. in Victoria during March 1965, and it was within this framework so many gave so much of their time and effort to assist in these potentially disastrous fires. That no lives were lost is in itself a tribute to the success of the State Disaster Plan, and Victorian W.I.C.E.N. operators can be proud that they can perform a vital and effective part of this Organisation.

THE AMATEURS' PART IN THE GIPPSLAND FIRES

(Continued from Page 2)

It was in this area that the provision of communication for fire fighting parties was doubly necessary and the ability to spot, report and douche stray fires started by air-borne fragments of still burning debris was an essential task.

Throughout the emergency two main base stations were utilised. VK3WI at the Divisional premises in East Melbourne was manned for 24 hours a day, as was the home station of Zone Co-ordinator, Graham Collie (VK3QZ) at Traralgon. These stations sent and received messages from the various disaster headquarters in the field. VK-3WI was connected by direct telephone lines to the disaster room at the Russell Street Police Headquarters. In addition to the passing of messages, VK3WI and VK3QZ were responsible for keeping the h.f. channel policed and anyone using the channel for non-emergency purposes was requested to change frequency to ensure that no interference to traffic was experienced by stations in the fire areas.

Since there were four medium powered stations operating from the Bairnsdale headquarters (W.I.C.E.N., Country Fire Authority, Army, and Country Roads Board), mutual interference became intolerable. Therefore a 6 metre a.m. link was set up between the disaster headquarters and the home of local Amateur VK3LL in Bairnsdale and all Melbourne bound traffic was routed through this link to VK3LL for re-transmission to Melbourne. Due to the high noise level at VK3WI, 80 metre traffic was received by VK3ZCE at Frankston and relayed via a separate f.m. channel into the city.

In addition to the communication function performed by W.I.C.E.N. throughout the emergency, many of the operators were given the job of repairing C.F.A. transmitters and receivers. One P.M.G. Officer has commented that it is now realised that due to the vastness of the area covered and the many fronts of operation, the emergency could not have been controlled without the big and complex communication system of which W.I.C.E.N. performed a vital part. A P.M.G. representative at one of the headquarters was told by Country Fire Authority Officers and Forest Commission Officers that in all its tasks W.I.C.E.N. operators had fulfilled a vital function.

The part played by the communication services in this emergency was perhaps best summed up in the following statement made by Mr. H. S. Robertson, the Co-ordinator of Communications under the State Disaster Plan.

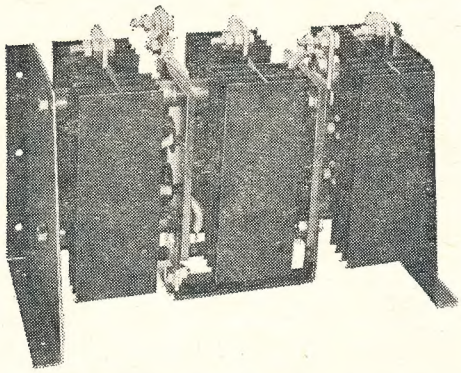
Mr. Robertson said: "The communications network, provided to assist the fire fighting and auxiliary services, was the largest ever to be established during a major disaster in Victoria. This network was set up quickly in accordance with a pre-arranged plan and operated at a very high level of efficiency throughout the disaster period. In this plan, W.I.C.E.N. was assigned an important role and in its achievement earned well merited and enthusiastic praise from all participating authorities. W.I.C.E.N. members can feel justifiably proud of a job well done."

BAND ALLOCATIONS

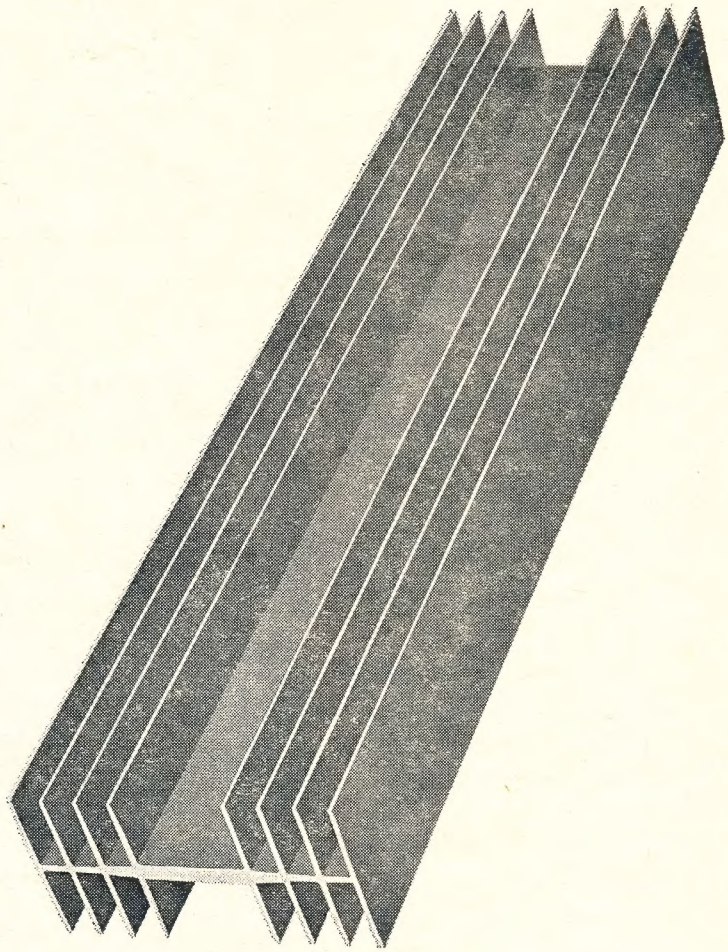
C.w. Only Kc.	C.w. and Phone Kc.
3,500 - 3,535	3,535 - 3,700
7,000 - 7,030	7,030 - 7,150
14,000 - 14,100	14,100 - 14,350
21,000 - 21,150	21,150 - 21,450
28,000 - 28,200	28,200 - 29,700

Heatsinks for Diodes, Transistors and Thyristors

- ***High Efficiency***
- ***Robust Construction***
- ***Reliable Rectification***



Mullard three-phase bridge rectifier assembly using silicon power diodes mounted on three heatsinks.

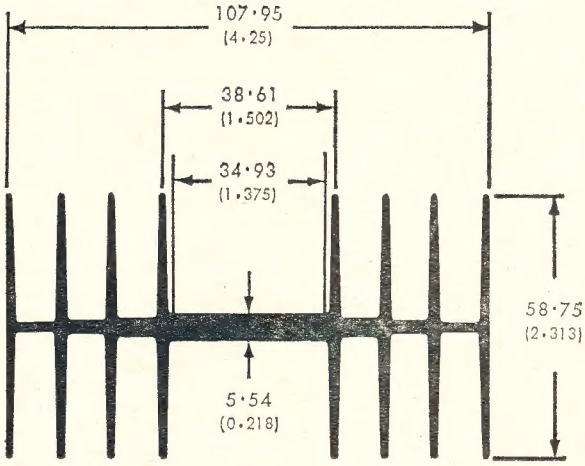


High efficiency, robust construction, reliable rectification — these are the factors gaining ready acceptance for the Mullard rectifier stack assemblies.

Much of the efficiency is due to the extruded aluminium heatsinks used in these assemblies with their low thermal resistance enabling high power ratings to be economically achieved.

The drawing on the right shows only the Mullard 40D heatsink extrusion.

A leaflet is available, detailing the range of patterns of Mullard heatsinks, their thermal characteristics such as the temperature rise above ambient tabulated against power dissipation and their outlines and dimensions. To obtain a copy of this leaflet, forward a stamped, self-addressed foolscap envelope endorsed "Heatsinks" to the Mullard offices shown below.



Dimensions in mm. Inch conversions in brackets

Mullard

MULLARD-AUSTRALIA PTY. LTD. • 35-43 CLARENCE STREET, SYDNEY, N.S.W., 29 2006.
123 VICTORIA PARADE, COLLINGWOOD, N.5, VIC., 41 6644
Associated with MULLARD LIMITED, LONDON

Mullard

M129A

A LOW EFFICIENCY TRANSMITTER FOR 80 METRES

M. J. McDONALD, VK6MM*

NOT only is the efficiency of this transmitter low, but it is also of low power, and if used in conjunction with a whip antenna is guaranteed to provide some most frustrating moments.

The r.f. section uses three transistors of the same type, one as a crystal oscillator and the other two in parallel as a modulated amplifier. The oscillator tuned circuit is adjusted for minimum d.c. input current to the oscillator consistent with sufficient drive to the modulated amplifier. 20 to 25 mA. should be about right. The final will then draw about 200 mA. off resonance and about 150 mA. when correctly loaded and tuned.

Theoretically one transistor should be capable of this, but because of difficulty in driving it is more expedient to use two in parallel. One could be operated by itself of course at half the power input (and output), but as modulator power is available for two, why not use two.

Collector efficiency is of the order of 50%.

Coupling the output to an aerial can be accomplished by a suitable L section or in the case of low impedance by a tapping on the coil.

Heat sinks on the transistors are not absolutely necessary, but could prevent overheating and burnt fingers during initial adjustments. A word of caution, however. The metal case is connected to the collector.

The modulator is the 1-watt amplifier using a commercially available printed wiring board. Because it is operating off 12v. instead of 9v. as intended, it is necessary to modify the bias network of the class B stage and increase the value of decoupling resistor feeding the class A stages.

A special modulation transformer would enable 100% modulation to be obtained, but is not really warranted since in excess of 90% modulation is possible using the normal speaker transformer connected as shown.

For a transmitter-receiver set-up, the audio section could, of course, also be used for the receiver by employing suitable switching. ●

* 75 Stirling Highway, Nedlands, W.A.

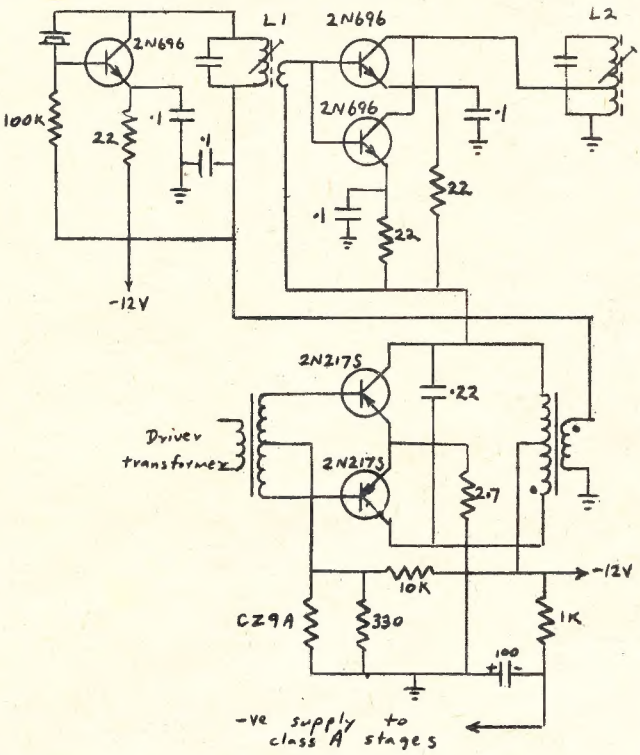


Fig. 1.

Schematic of 80 Metre Transmitter.

Coils used in original (not necessarily optimum):—

Formers—7 mm. diam., slug tuned.

L1, Primary—25 turns of 27 B. & S., tuned with approx. 820 pF.

L1, Secondary—12 turns of 30 B. & S., wound over primary.

L2—16 turns of 23 B. & S., tapped at 5 turns, tuned with approx. 820 pF.

CALL SIGNS

"One thing that I cannot understand about s.s.b. is why, after suppressing their carrier and one sideband, they also have to suppress their call signs."

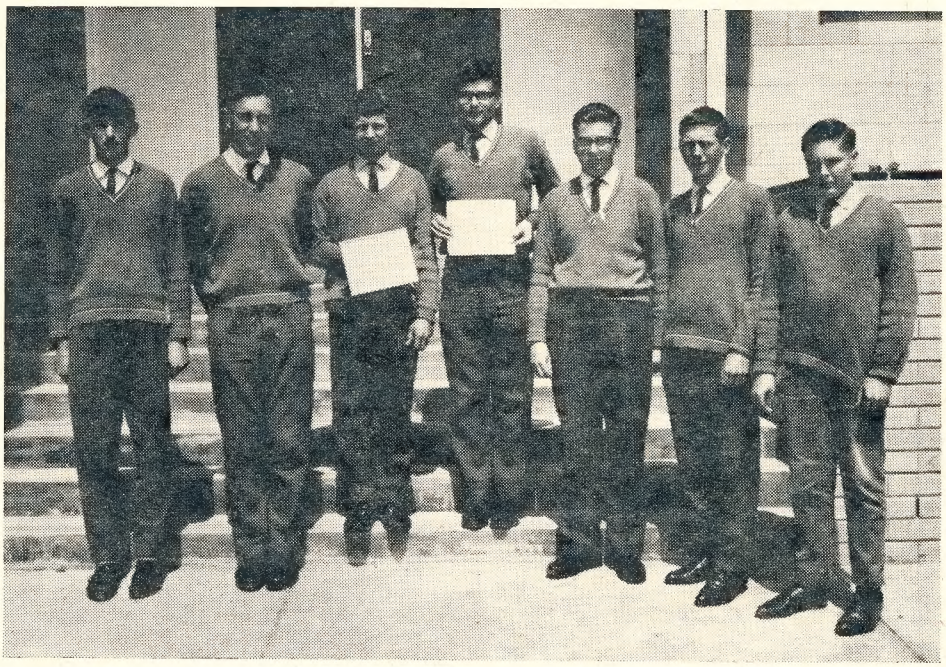
—"The Cornish Link"

— . . . —

WAVELENGTH OF TEN MILES

The familiar transmissions from WWV on the h.f. bands are accurate to one part in ten million; but the new VLF stations WWVB and WWVL at Fort Collins, Colorado, will be accurate to one part in ten billion. The former is on 60 kc. and the latter on 20 kc. (at present only with one kilowatt but destined for 50kW.). These enormous aerials, high-powered transmitters and long wavelengths are back with us because short-wave transmissions do not reach distant points **via** a reliable path—ionospheric reflection introduces irregularities which nullify the accuracy of a time signal (when talking in terms of astronomical and space-age requirements). Hence VLF and "ground wave" . . . world-wide coverage without reflection, since the ionosphere and the earth's surface form one enormous wave-guide. The wavelength of station WWVL is roughly 10 miles!

—"The Short Wave Magazine," August, 1964



These lads from the Korumburra High School Y.R.C. were the first in VK3 to gain the Junior Certificate under the Y.R.S. Left to right: K. Stone, R. Proudlock, R. Stewart, I. Robinson, P. Tyers, J. Heath, and G. Tuile.

THE SWISS QUAD

DESIGNED BY HB9CV, BUILT AND TESTED BY VK6DR

W. H. H. WEDEMEYER, VK6DR

A DESCRIPTION of a Swiss Quad appeared in the October issue of "DL-QTC," the German version of "Amateur Radio." This antenna is a very appealing one, especially as it would solve the problem of having the elements supported by bamboo or aluminium piping. The Swiss Quad, designed by HB9CV and patented in Switzerland, claims gains up to 14 db. in DX work. This would be extremely good if it could be realised.

The following article will give a description of the Swiss Quad as per "DL-QTC" and also the construction and first working experience of a 20 metre version at this station. A write up also appeared in the R.S.G.B. Bulletin (June 1964), but unfortunately was not at hand here.

The quad consists of two parallel squares with a quarter wave side length and a distance of 0.1 to 0.075 wavelength between elements. Both squares are supported directly on a vertical mast by bending all horizontal elements 45 degrees in the centre as per Fig. 1.

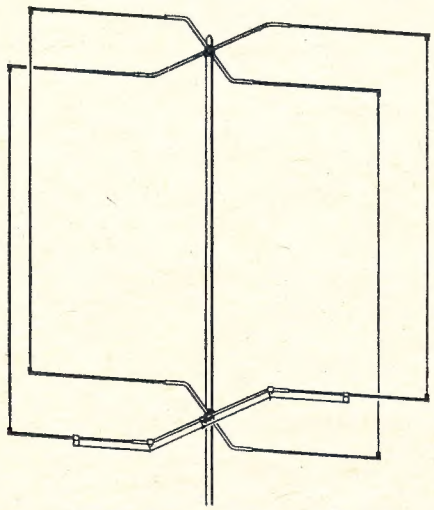


Fig. 1.—General arrangement of the Swiss Quad.

The vertical elements consist of Litz wire but solid copper wire has been used in my quad with success. The horizontal elements are aluminium piping and to improve mechanical strength, the pipes go past the centre mast to form part of the other element. The cross-over point is maximum current and needs no insulation from the other element and the mast.

It was found that only a parallel positioning of the squares produces proper phase conditions with suitable radiation pattern, i.e. the main lobe containing 95% of the radiated power and very small side lobes. The cross-over portions are not interacting as the currents in them are opposite and little radiation takes place.

* 9 Arthur Street, Lesmurdie, Western Aust.

The extraordinary small distance between the squares of only 0.075 to 0.1 of a wavelength would normally produce a very low radiation resistance and a small bandwidth, but the feed to both elements distributes the energy evenly to all four dipoles, keeping the feed resistance to 30 to 40 ohms.

With a recommended distance of 0.1, the bandwidth is sufficient for the 20 metre and 15 metre bands. The radiation pattern does not change very much, even with a change of as much as 9% from actual resonance.

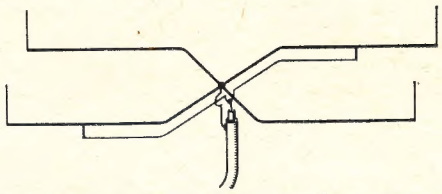


Fig. 2.—Co-axial feed and matching system.

The quad is fed from the lower cross-over point, but may also be done from the top if desired. A double gamma-match is recommended for co-ax feed of 52 or 75 ohms and twin lead feed 75 to 600 ohms is matched best with double T arrangement.

HB9CV explains then further, that the necessary phase difference of about 180 degrees between both squares is achieved wholly by having a 5% difference in circumference between both squares. The smaller one becomes a director and the larger one the reflector.

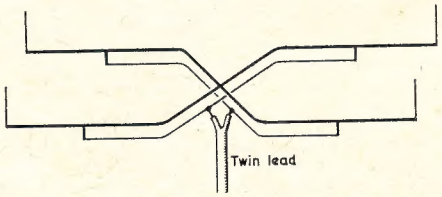


Fig. 3.—Balanced feed and matching system.

With two directly fed and electrically the same squares, it was found that the inductive components in the reflector and the capacitive ones in the director in relationship to the feed point are cancelled. Confirmation of this is that the resonance of the whole antenna as measured at the feed point is in the middle between the self-resonance of each antenna square.

The optimum difference in circumference of 5% between each square was found through several test measurements. The side lobes increase if the difference is made less than 5% and a difference of more than 5% increases the horizontal radiation (broader main lobe) and the gain decreases. With a 5% difference between both elements the feed and matching of the Swiss Quad shows the advantage of being equal to that of a dipole.

ADVANTAGES

Mechanical: Full metal construction, no supporting parts, mechanically stable through having both squares mounted directly onto a mast, and small wind resistance.

Electrically: Simple feed to both elements, small current loss through evenly distributed energy into all four dipoles, the use of pipes at high current points, no dielectric losses as all high voltage points are free of supporting structures, and the use of all types of feed lines.

PERFORMANCE DATA

The following data are practical ones, measured in tests in the 14 Mc. and 21 Mc. bands:—

Gain Over Dipole

Direct radiation:
- Short distance .... 6 to 7.9 db.
- Intercontinental distance 12 to 14 db.

Front-to-back ratio:
- Short distance, 10 miles .... 15 db.
- Short skip, 600 miles .. 10 to 12 db.
- DX work, more than 1,800 miles ....18 to 24 db.

Rejection off the sides (about 80 degrees off main lobe) .... —32 to —40

Width of main lobe at half power points .... 60 degrees

The radiation pattern is shown in Fig. 4.

MEASUREMENTS FOR CONSTRUCTION

The whole length of a square has to be a little longer than a full wavelength, circumference equals wavelength times 1.12. This factor is independent of element thickness.

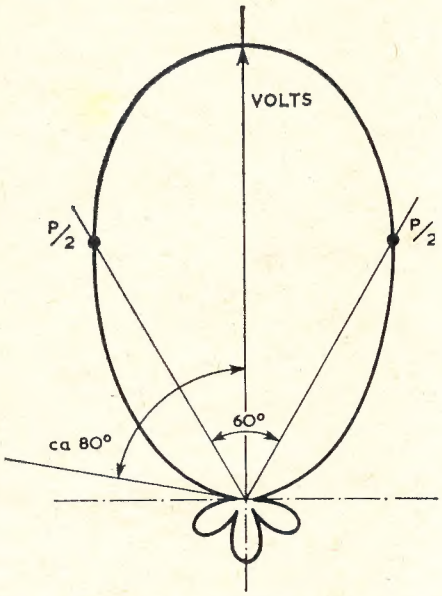


Fig. 4.—Polar diagram of Swiss Quad Aerial.

With a length difference of 5% between director and reflector, the director has to be 2.5% shorter and the reflector 2.5% longer than the resonance length, i.e. the centre frequency of the whole antenna. We now have:

Length of reflector:
1.12 × wavelength × 1.025 = 1.148.
Length of director:
1.12 × wavelength × 0.975 = 1.092.
Spacing between elements:
0.1 wavelength.

The difference in length is for practical purposes distributed only between the horizontal sections, the vertical length is the same.

To adjust the quad for the chosen frequency, the lower horizontal assembly is shifted up or down on the vertical mast, thus obtaining even shortening of director and reflector.

Table 1 gives the measurements for different bands.

The width is measured between the outer points, without considering the kink in the middle. To find the pipe length, scale antenna onto a piece of paper and measure.

Frequency	Wavelength in Metres	Height (Inches)	Width Reflector (Inches)	Width Director (Inches)	Spacing (Inches)
28.50 Mc.	10.52	116	121.5	110	41.3
21.20 „	14.14	156	164	148	55.5
14.15 „	21.20	234	246	222	83.5

Table 1.—Swiss Quad Measurements.

The connecting points for the gamma match or T match are found by experimenting as conditions vary too much, but for the start it may be best to connect half way between the ends of the horizontal element and the bent part towards the mast. The distance of the gamma match wire is about 1/200th of a wavelength and any stiff wire having a diameter close to that of the inner conductor of the feedline may be used. For v.h.f. quads, the whole square can be made of piping.

HB9CV then carries on with mechanical construction details of his 15 metre quad, but as I had the need for a 20 metre one, it was obvious that the described mechanical construction was not adequate at all for 20 metres.

Having lost two conventional quads through storm and improper construction before, I decided to build this one as good as it can be done in any engineering shop. Another important factor was, that I could not rely on plenty of help by someone to put this thing up.

The following is an account of what may be done to get any sort of antenna up, not only a quad. It took quite a bit of hunting around for suitable aluminum pipes and I finally settled for ¾" hard-drawn ones and some ⅝" pipe which fitted perfectly into the ¾" pipe. This pipe is obtainable here in the West, and anybody requiring the address of the firm may contact me any time. The quantity needed is four lengths (18 feet per length) of ¾" and two lengths (also 18 feet) of ⅝" diameter for a Swiss Quad on 20 metres.

To have each element going past the crossover point at the mast, it is necessary to bend the pipes twice (see Fig. 5). Bending pipes is a problem in itself. I was lucky to be able to borrow a pipe-bender from the local welding shop. To avoid kinks in the bends, pipes are usually filled with fine sand tightly and the ends are sealed. As the season was against me, the sand was wet and took far too much effort to fill four pipes, so I gave it a go without filling and it worked okay. Two of those bent pipes on top of each other and you have the top section.

Fig. 5.—Plan for bending pipes.

The centre support needed a lot of planning to make it easy to build and stable enough to be the main support. It worked out like this: Two one-foot lengths of angle iron ¾" x ¾" x ⅛" welded onto a piece of angle 1½" x 1½" x 3/16" 2½" long. Fig. 6 shows the view from the top.

This type of construction needed only three sawcuts and some welding, forming two crossed cradles, to place the pipes into. The centre angle iron fits onto the mast, its actual size depending on the vertical mast diameter. This angle is drilled under and above the welded one-foot long angle iron to take the bolts holding the lot on to the mast. To stop the pipes rotating in their cradle, and also to provide the electrical centre point and connection, I have drilled a ¼" hole through the pipe into the angle iron and tapped the angle to provide a good electrical contact. This connection has to be made right in the centre, and only there, to prevent any unbalance.

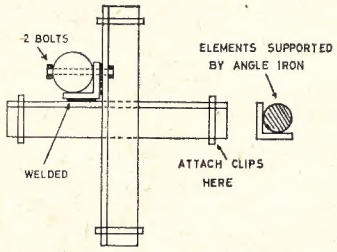


Fig. 6.—Arrangement of centre support.

I wrapped good quality electrical tape around the elements for the whole length of the supporting cradle so that only the centre bolt provides the electrical contact, also holding the element firmly in its position. Close the ends of the angle iron, water-hose clips were tightened around angle and pipe (still insulated by tape) to give it a good support. To obtain the exact electrical and mechanical centre, I measured from the outside of the elements along the bent portion to the centre bolt; both sides needing to be of the same length. (See Fig. 7.)

The lower horizontal assembly is done in the same way.

The ⅝" pipe is fitted into the outer ends of the ¾" elements to extend to the required width, and then secured by a clamp with a saw-cut giving it the necessary room for tightening.

The length of the director in my case is 18 ft. 6 in., and the reflector 20 ft. 5 in.

The outer ends of the ⅝" pipes are flattened and then drilled to take a 3/16" gutter-bolt which is holding the vertical wires. I assembled both sections on a 6-foot pipe, dug into the ground, and the work was quite easy, at the same time providing the same conditions under which that section will be when up in the air.

Even the use of ¾" aluminium pipe did not give the assembly enough rigidity and the outer ends of the elements tended to pull apart under the weight of the vertical wires. I had to keep the ends from shifting with respect to one another and as those points are high voltage ones, good insulation was needed. As there is no insulation material of seven feet in length, very light in weight and small in size on the market, I finished up buying some ⅜" round ebonite rod, fitted a foot of it into each end of a 7/16" diameter aluminium pipe to give an overall length of seven feet to go between the outer ends of the elements.

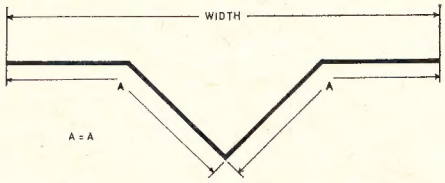


Fig. 7.—Both sides must be equal length.

The ebonite rods were tapped 3/16" in the centre and then screwed into the gutter-bolts which support the vertical wires. The rod on one side can be secured tight to the pipe while the other side must turn in the pipe in order to screw onto the opposite element. Once it is screwed on, a small hole can be drilled through pipe and ebonite rod and split-pin will stop it from unscrewing.

As the tips of the elements are a fair distance from the centre (about 9 to 10 feet), there is a certain amount of sag, also the weight of the wires is not helping any. It is therefore necessary to give the top horizontal assembly a good amount of upward prestressing to counteract this sag. I did this, but found that I should have given it even more. A better idea is the use of nylon guys from an extended portion of the vertical mast to the outer ends of the elements.

After completing both sections, I mounted the top part with the wires dangling down onto a 1" pipe of full length, lifted it up in the air and secured it to a small iron post in the ground. The lower section can now be clamped onto that mast with a G clamp, the vertical wires temporarily con-

nected to the lower elements and the wire for the gamma match fitted, held in place by strips of plastic tape.

A short piece of coax. with a two-turn coil on one side was connected to the double gamma match and the centre bolt on the mast. A g.d.o. determined the resonant frequency, being coupled to the coil. This frequency may now be raised or lowered by shifting the lower horizontal assembly up or down on the mast, at the same time adjusting the vertical wires. I found that my g.d.o. gave two readings—when loosely coupled it was 14.2 Kc. and tightly with a good dip, at 14.1 Kc. As it did not worry me which of those was the proper one, I left things as they were, drilled the holes in the mast to fit the lower section into its permanent place and then proceeded to improve on the matching construction by fitting clamps with strips of 4" long fibreglass 3/16" thick to the elements to hold the gamma match wire in place.

The connecting point to the element was done as recommended and when I excited the Swiss Quad, the s.w.r. was 1 to 1 in the middle of the band, going to 1 to 1.5 at 14.3 Mc. and 14.1 Mc. This was pure luck and others might have to shift the connections to obtain the lowest s.w.r.

Incidentally, I made both gamma wires the same length, the one going to the reflector being shorter when measured from the outside of the element. But of course measured from the centre, will be equal. The distance between element and gamma match is 4".

RAISING THE QUAD

This completes the quad proper and the next problem was to get it into the air. This is the way I have done it. A 2" water pipe was drilled with 3/16" diameter holes 18" apart all along its length. Then a 1½" pipe went into the 2" one, leaving two feet of it sticking out. This pipe was then drilled, in the same way, using the holes in the 2" pipe as a guide. Both pipes can be drilled together—it is of importance that the holes are all in line.

Into the 1½" pipe went a 1" pipe (this being the one to which we fitted the horizontal elements before in the test set-up). My 1" pipe was only 15 feet long and I fitted a 10 ft. length of ¾" waterpipe into it, to make the overall length 25 feet. The ¾" is a tight fit and some filing had to be done. All you have now is three lengths of pipes, telescoped into each other, with a total length of 25 feet. It is not too hard to get the lot into the vertical position.

To support this lot, I have robbed one of the trees in the garden of its crown and a solid metal structure is holding the pipe in its position at a height of 20 feet. The foot of the pipe rests in a concrete foundation on a bearing, the foundation taking any side-strain. The sawn off tree provides quite a good platform (cat-walk if you like) to work from and from here the top horizontal assembly was fitted on to the inner pipe.

The next step is to lift out the pipe plus top assembly, following its lower end with a heavy nail or what have you through the pre-drilled holes. The nail has to pass through both drilled pipes. The lifting involving only a distance of 18 inches or less if the holes were drilled closer together. Any XYL or harmonic can assist, by pushing the nail or pin through the holes while the OM is standing on the platform doing the lifting.

After the first pipe is out far enough, it was secured by a bolt to the second pipe and the lifting started once more, this time after the lower horizontal assembly was attached to the mast at the pre-drilled holes. At this point, we had to fit the permanent feedline to the gamma match and tape it to the mast. Again, the pin followed the lifting, passing through the 2" pipe only. Another bolt secured the second pipe, the lot now being 60 feet to the top. A handle on the lower part of the 2" pipe turns the whole assembly.

The Swiss Quad was watched carefully for the first weeks and still is, as it sways quite a bit in the wind. I hope it will stay up. It may be advisable to use large diameter seamless tubing, using the same method of telescoping, to counteract the swaying.

FIRST TESTS

Reports from various VK6 Amateurs showed varying results, but excellent front-to-back ratios—all of course measured with S meters of undefined calibration or none. Some DX worked showed that the signal was quite substantial, usually getting a reply if conditions seemed fair. No proper tests could be conducted, as the QSB was too heavy on most DX stations. The transmitter input was 80 watts, with screen modulation.

Very successful close-range tests were run with VK6QL and through careful calibration of the S meters in both stations, a reliable indication of front-to-back ratio was achieved. The front-to-back ratio was 19.5 and 20 db respectively, the distance being about 15 miles.

In his article, HB9CV states that a rejection of —40 db. may be obtained at 80 degrees off the main lobe centre and that these points are very sharp. This proved to be true, the sharpness at one point is remarkable. It is possible to turn the quad so that this "rejection notch" phases out an interfering station and still being able to copy "your" station, as the main lobe width is fairly broad (60°).

It was found that the side with the director facing the station had a better rejection than the side having the reflector facing it. A reason for it may be the feed of that side. Comparison test with a standard dipole are in progress, but as the quad will show its best only in DX work. I have to wait for better conditions to try if the claimed gains in DX may be achieved. ●

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DX-PEDITION TO NORFOLK ISLAND (VK9TL)

KEN MATCHETT, VK3TL*

LYING about a thousand miles east of the Australian mainland and half way between New Zealand and New Caledonia is the tiny island of Norfolk. Discovered by Cook in 1774, the island is best known through its associations with the convict era of Australian history, but is also well known by DX enthusiasts as a separate "country" in their A.R.R.L. list.

The preparation for the trip was the same for any holiday, the usual clothing, shaving gear, writing tablet and a hundred other items; but in addition quite a deal of attention had to be given to what might be required in the operation of a radio station to be set up on the island. A telescopic aluminium vertical was prepared for 40-metre operation and a tri-band beam for the higher frequencies. In addition, a dipole antenna was packed up for good measure. It was so necessary to attend to details. Seemingly simple things things such as a length of earth wire, log-book pages, U-bolts and clips for the attachment of wire to tubing and spare fuses could hold up activities for hours were they not available when required. Furthermore, simple tools, a soldering iron, a multimeter and, of course, the necessary transceiver, headphones, c.w. monitor, loudspeaker, Morse key, s.w.r. bridge, co-ax leads and many other items required a place in the luggage.

The 40-metre vertical consisted of four sections of aluminium tubing, each ten feet long, which could be bolted together. These items with the tri-band beam made up a considerable parcel by themselves! Although Norfolk can be reached by ship, time dictated the use of aircraft, flights of which are scheduled twice weekly from Sydney during the summer season. Excess luggage costs were a prime consideration in the planning of the DX-pedition.

Travelling with fellow science lecturer Jack Hyett, of the Burwood Teachers' College, the trip was made to Sydney from Melbourne on 2nd January. After an overnight stay in Sydney, we were ready to take off for Norfolk early the next morning. The flight to Norfolk Island is made in a DC4 aircraft, the airstrips at Norfolk apparently being unable to cope with heavier planes. The air trip itself is rather uneventful except that Lord Howe Island, another interesting spot of DX activity, can be seen from the aircraft. The journey takes a little over five hours, one's watch being put forward one and a half hours before landing. While on Norfolk it was found easier to keep the station log in local time and later on return to Melbourne to make a second column in the log for G.M.T. (11½ hours behind Norfolk Island time).

One of the most beautiful sights one could imagine is the first view of Norfolk Island jutting out of the blue ocean with its many patches of white breakers. Steep cliffs with their jagged dark basalt rocks rise precipitously two hundred feet or more from the sea. The plane just seems to skim over the top of the cliff and it is then when one realises for the first time the beauty of the Norfolk Island pine. There are thousands of these magnificent trees, some of which are two hundred feet high. A truly lovely picture is made up by these tall trees and the almost lawn-like appearance of the short kikuyu grass which spreads itself like a bright green carpet over most of the island. Now and again the flatness of the land is broken by the many valleys and rises which make up the undulating pattern of the island. Only in the north-west does the land reach any considerable altitude. This is the area of jungle vegetation associated with Mount Pitt and Mount Bates, both of which rise about a thousand feet and from which an excellent view of almost the whole island can be obtained.

There are two air strips on the island, one of coral limestone, the other of grass. Our plane landed on the grass strip and it was as if we were landing on a golf course. Before any passenger may alight from the plane, the interior of the plane is sprayed with insecticide, a necessary precaution against the accidental introduction of the fruit fly. We were met at the airport by Ray VK9RH. While on the island, we had the good fortune to be entertained by Ray and his family and to be shown over the D.C.A. transmitting station where Ray is employed.

Photo of Ken VK9TL atop the old water tower. Norfolk Island pines are in the background.

We started to set up the rig on Sunday, January 3. Although I knew that a disused water-tower was on the site where we were to stay, I had no idea of the difficulties which were to confront us in the erection of the beam. Very fortunately our next door neighbour, Karl, came to the rescue and it was mainly through his efforts that the damaged vanes of the wind mill tower were cut down so as to enable the erection of the antenna. This operation itself took several hours. Winds can be quite strong on Norfolk; for only eight months previously, it was the force of a hurricane that had rendered the steel water tower useless.

In the afternoon of the 3rd, the first QSO was made with a Hawaiian station, and after that the calls came very quickly. Fortunately the DX-pedition had received prior publicity through "QST," "CQ," R.S.G.B., Dutch "DX-Press" and several other DX news magazines. For several months previously the VK3 Outwards QSL Manager, Ivor VK3XB, had included a roneoed information sheet with the bundles of QSLs forwarded to each QSL Bureau. The beam worked well. I had no prior information just how far my room in the boarding house would be from the tower and so sufficient co-ax and connectors had to be taken to cover all possibilities. In order that the beam could be rotated independently of electricity, a lever system was devised which could be easily attached to the top of the beam and be rotated by means of four long lengths of nylon cord. I was very anxious to learn of path openings especially to Europe, Africa and the U.S.A. since I knew that a lot of chaps were expecting contacts with me and I was keen to give them the QSO for which they had been waiting so patiently.

Briefly the daily time-table read something like the following: 1930 G.M.T. (6 a.m. local time) there was some 40-metre activity but more importantly, some long-path openings to the east coast of the States. Unfortunately these long-path openings were not available as frequently as I had experienced from VK3, but I tried to make the most of them when they occurred. From about 2130 (0900 local) to about 0200z (1.30 p.m.) there were spasmodic openings on 20 metres to the States, most of the QSOs being made on c.w. In the early afternoons there was very little activity and I took the opportunity to catch up on sleep during those off-periods.

In the late afternoons there were a few openings to the Pacific area, California and South America. I also had a regular sked with ZS6NE. It was just unfortunate that the time in South Africa was about 9.0 a.m., which meant that so many South Africans were unavailable at the time when the band

* Smiths Rd., Templestowe, Victoria, Australia.

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was open. After this, I used to swing the beam around to the north and work JAs on c.w. for a couple of hours. The long-path opening to Europe started about 0830z (8 p.m.), but unfortunately didn't last for long on most evenings. After this, the short path to Europe would open.

After the first day of the operation, Jack, Karl and myself erected the 33-foot 40-metre ground plane. I had a job balancing on the top of piled-up boxes so that, using my left hand, I could bolt on the last ten-foot section to the bottom of remaining 23-foot length of tubing which I was holding up in the air with the other hand!! The finished structure was held vertically by means of six "guy wires" of tough nylon cord and was stood on a six-inch insulator on top of the stack of boxes. To the base was attached the co-ax and a series of three (later increased to six) radials. Because the ground plane had to be erected between two buildings, these radials, each a little over 33 feet in length, could not come off in straight lines, but despite this fact the antenna worked remarkably well.

Possibly 800 QSOs were made with this ground plane antenna on 40 metre c.w., the great majority being with Stateside stations. The time at which best results were obtained to the U.S.A., the Caribbean, and the South American continent was from about 1130 to 1430z (11 p.m. to 2 a.m.). Generally I used to take a break during this period to sked Dom IT1TAI. We used to remark that we had a pipeline between us, since there were very few European stations that could copy or who were available at that particular time (1300z) and yet we were exchanging reports of Q5, S9.

Although QSOs were made on all bands from 10 through to 80, the great majority were made on 20 and 40. On the whole, band conditions were not good; this was the period of sunspot minimum and in any case the month of January is well known as a rather poor month for DX activity from the Southern Hemisphere. These facts made DXing from Norfolk a long drawn-out process at times.

Despite the fact that the rig was on at least eighteen hours of each day, it was a remarkable thing how one could quickly become accustomed to a limited amount of sleep. Rest during the day presented no problem since Norfolk is really a quiet place. There is no public transportation and although there are several motor scooters hired out to tourists on the island, the lasting picture that one had of the countryside is the dusty country roads and the many cows that wander almost aimlessly about. I saw no flies during the time I was there. However, mosquitoes did their best to annoy me in the evenings, and I had to take steps to wipe around the window with kerosene each evening. The total absence of snakes and frogs on Norfolk no doubt accounts in some measure for the number of mosquitoes.

Because Norfolk is just a tiny island (it is only five miles by three miles) and is surrounded by a great body of water, one expects a very equable climate. The temperature never rises above 80 degrees and while we were there it seldom dropped below 60. Some tourists may be troubled by the humidity which is frequently 80, but it gave Jack and me little worry. I did find, however, that I was unable to wear rubber sandshoes.

I must confess that I did not see as much of this beautiful island as I should have. Occasionally I took an hour or so to make a car trip to scenic beauty spots and places of historic interest. Some of the cliff scenes are breathtakingly beautiful. Not much remains of the old convict prisons at Kingston, much of the building material having been removed in days long since gone by the Pitcairn Islanders when those people migrated to the island a hundred years ago.

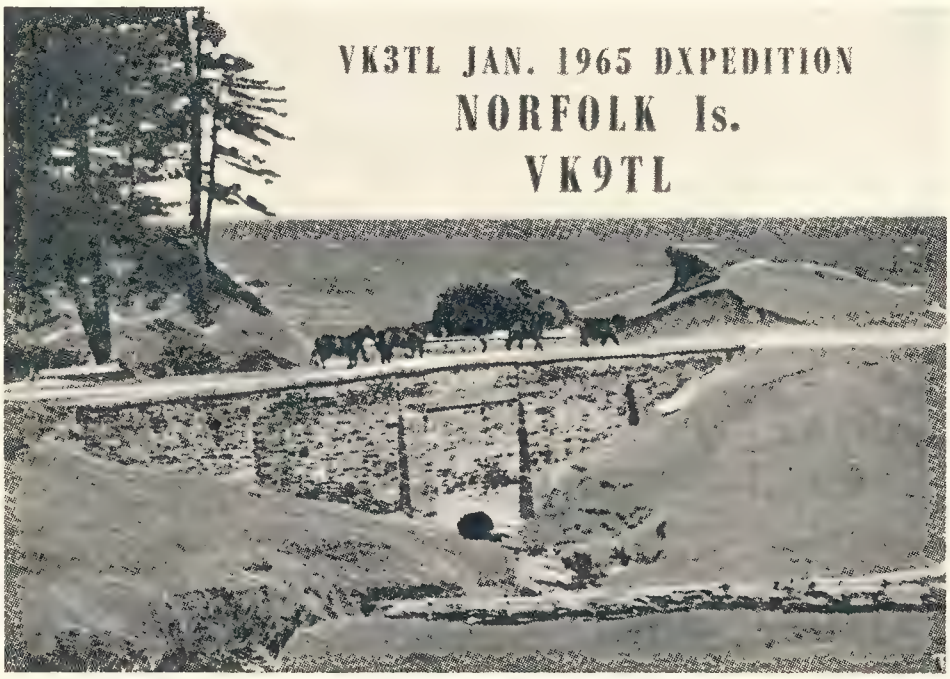
The population of Norfolk is somewhat less than a thousand and several of these have the dark skin of their Tahitian ancestry. Now and again, we went down to the airport where mail from home could be collected. The administrative centre is at Kingston where, in addition to the prison ruins, there is the post office, liquor bond store (there are no hotels on the island) and Government House. The island is under the charge of an Administrator appointed by the Commonwealth of Australia. At the post office the delightful postage stamps of the island can be purchased.

Close to Government House is the old cemetery containing the many graves of soldiers and convicts of the old penal settlement. The headstones of the graves make fascinating reading of a grim page in Australia's history.

Life moves at a very leisurely pace. The people are friendly but one has the feeling that they wish to be left alone. Several fear the possible commercialisation of their beautiful island home. The main source of income is the growing of various tropical seeds and nuts and, of course, tourism. There is no income tax on the island and although the cost of living is not cheap, luxury goods such as radios, watches and jewellery can be purchased at prices far below those ruling in Australia and New Zealand.

Washing presented a problem at times. The red volcanic dust of the island permeated one's clothing, and owing to the water shortage at that particular time of the year, the position could have become critical. It rained heavily only once during the month. Water tanks were speedily replenished during one evening when no fewer than 230 points were recorded within four hours.

Electricity is expensive by mainland standards. The rate of one shilling per kilowatt-hour made up a sizeable account by the end of the twenty-eight days of operation. The voltage is 240v. a.c., but there were times when it dropped appreciably below this. There were four power failures, fortunately only two occurring in the middle of a QSO.



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QRM was a major problem with which one had to contend. Powerful VK, ZL and other Oceania stations made copy difficult at times, particularly of signals from Europe. But one just has to accept this. Several stations very kindly co-operated by QSYing from near the frequency. Worst QRM came from I.P.S.O., the Ionospheric Prediction transmitter in the near neighbourhood. This transmitter's signal made copy almost impossible every thirty seconds on each quarter hour in addition to other transmissions timed on the hour G.M.T. It was unfortunate, too, that extra sweeps had to be conducted from I.P.S.O. to correspond with the passage of a satellite over the island during the second and third weeks of the DX-pedition. This seriously interferred with long-path openings in the early morning (local time) to the Eastern United States.

(Continued on Page 14)

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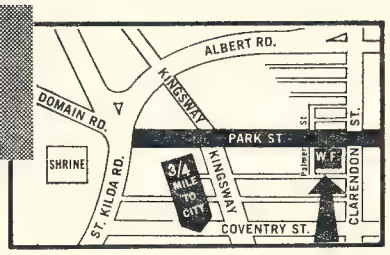

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The Historical Development of Radio Communication

PART FIVE—THE ADVENT OF THE TRANSISTOR

J. R. COX, VK6NJ*

CHAPTER FOUR

The Conquering of Mobility

"The transistor was the unexpected result of scientific curiosity" and is "essentially a triode form (three contact) of the old-fashioned crystal detector."

—United States Information Service: "Twelve Inventions that Changed the World."

In 1948 the transistor "arrived" and with it came a new era in wireless communication. By the experience of these past fifteen years it can now be realised that this device has brought about the partial eclipse of the vacuum valve as a dominant factor in the development of wireless communication. It can be said that, as a result of the advent of the transistor, "we are in the midst of a technical revolution".[83] This present period could aptly be called the transistor period. As new as the discovery of the transistor is, the events leading to its finding are not by any means as recent. They do, in fact, stretch back to radio's infancy.

The transistor is a semi-conductor and depends upon conduction of electricity through a solid. Early pioneers began to assemble information about conduction in solids as early as 1906. The actual property of semi-conductance or unilateral conductivity was noted by F. Braun in 1874 who observed this phenomenon in various metals,[84] long before the advent of wireless itself!

General H. H. C. Dunwoody's work with point-contact crystal detectors has already been mentioned, but bears mention again as the transistor has been described as "essentially a triode form (three contact) of the old-fashioned crystal detector".[85] General Dunwoody pioneered, it may be added, the application of a very low and steady electromotive force to the crystal detector.

"A transistor may be considered as an extension of an ordinary junction diode which consists of two pieces of semi-conductor matter of slightly different composition"[86] bears direct association with this analysis made in 1910: "It has been found that a contact of small surface between certain conductors as, for instance, between tellurium and aluminium, also between silicon and copper, possesses the power of rectifying high frequency alternating currents".[87] Other investigations on the performance of semi-conductor detectors were made in 1906 and 1907 by Professors G. W. Pierce and G. W. Pickard.[88] They, in fact, established two basic facts in regard to conduction through crystal detectors. One such fact was that the conductor possessed unilateral conductivity and that the conductivity did not obey Ohm's law.[89]

The aforementioned details support the interesting observation that the pioneers of early wireless communication can be linked with the discovery of radio's newest mode of development—the transistor. By their scrutiny and experiments such men as Dunwoody, Pierce, Pickard and Fleming helped find the elements later used for transistors and, by so doing, formed a starting point for the further progressive research which ultimately led to the foundation of the modern theory of conduction in solids. This itself was a factor which led to the discovery of the transistor.

The forerunner of the transistor, a two-element semi-conductor, could not amplify signals but was extensively used in early wireless receivers as a detector. Usually in the form of a "cat whisker", crystal detector, it formed a primary means of detecting Hertzian waves; then, later, as a detector feeding the rectified signal to a following triode valve amplifier.

The diode crystal detector suffered from two defects which caused its decline. A very loud signal or a burst of static often destroyed the point of contact between crystal and cat whisker. When this happened a new point had to be found, and a mishap like this in the middle of a programme did not enhance its popularity. The other defect was its inability to amplify the signal. Thus when valves improved to the stage where they could simultaneously detect and amplify they superseded crystal detectors and by the early 1930s crystals were rarely used.[90]

Scientific interest in semi-conductors did not lapse, however, and by 1939 knowledge of them had vastly advanced since the time of Pickard and Pierce. The onset of the Second World War was responsible for an intensified research into semi-conductors and this investigation helped bring the discovery of the transistor nearer. The research was undertaken because of the demand for an efficient detector for radar waves. It was found that the most satisfactory device was the crystal detector and so it once again came to the fore. The benefit of its revival extended beyond the solution of this wartime emergency. But, because of this pressing need, data was unearthed on semi-conductors which afterwards incited curiosity in electrical flow across semi-conductors.[91] It was by pursuing this line of thought that the transistor eventually materialised in 1948.

For a few years prior to the Second World War a demand for mobility in wireless equipment gradually had grown. Two causes stimulated the directing of wireless production towards mobility. The first reason was the actual increase in the mobility of society itself. From about the middle 1930s onward people travelled more and this made the concept of portable radio receivers a very acceptable one. Secondly, when the war started the necessity had become more urgent. The 1939-1945 conflict was a mobile war and this accentuated the need for dependable mobile wireless communication equipment.

A certain amount of mobility had been achieved before 1939 by reducing the size of valves and, during the war, other special methods of attaining mobility were invoked. From these methods various wireless sets resulted, but the degree of mobility, though useful, was not entirely satisfactory. In the first place, because all equipment depended upon valves, the possibility of breakdown because of their inherent frailty was always present. Such attainments in mobility as were achieved, were mainly due to two factors: the designers' skill in cramming components into the smallest possible space, together with the manipulation of circuitry, enabling some parts to serve dual purposes. These two features also facilitated the construction of wireless sets, in compact units, capable of both receiving and transmitting. And so, cramming and manipulation, rather than miniaturisation, brought about some reduction in size, which in turn made mobility feasible and convenient.

There was, however, a limit to overall size reduction in mobile equipment under these conditions; a limit governed by the dictates of valve usage. These dictates were the necessity for a high voltage to enable the valves to function, and the need to have space around each valve to safely dissipate its heat. The degree of miniaturisation of components was also restricted by the employment of high voltages.

A good example of pre-transistor mobility is found in the instance of the No. 11 Department of Defence Wireless Set. Manufactured in 1942 for military use, this model was extensively used by British forces. It displays the intricate wiring, array of valves, component cramming, and combination of receiver-transmitter. The set was powered by two twelve-volt, wet-cell, batteries actuating two genemotors which produced the requisite four hundred volts. Apart from adding to the bulk of the outfit, the genemotors drew about twenty to thirty amps. from the batteries to initiate the gene-

* Government School, Yornup, W.A.

[83] United States Information Service: "The Transistor—Miracle Tool of Electronics"; a 24-page booklet printed in U.S.A., 1959; p.4.

[84] Fleming: op. cit., p.473.

[85] United States Information Service: "Twelve Inventions that Changed the World"; pp.26-27.

[86] Radio Corporation of America: "Introduction to Junction Transistors"; a 29-page journal printed in Camden, New Jersey, U.S.A., June 1959; p.1.

[87] Fleming: op. cit., p.473.

[88] Ibid.

[89] Ohm was a Bavarian scientist who discovered the relationship between the values of current, voltage and resistance in a circuit. His law can be stated to be that the current flowing in a circuit is directly proportional to the applied electro-motive force, and inversely proportional to the resistance. The law can be expressed as an equation: I equals E divided by R, when I is current in amps., E volts, and R resistance.

[90] Manly, Harold P.: "Drake's Radio Cyclopedia"; Frederick J. Drake and Company, Chicago, 1929, 3rd edition; 700 pages—not numbered.

[91] See Appendix 3, Principles of Transistor Operation.

motor action. The genemotors also created their own interference. Then valued as portable or mobile wireless sets, the No. 11 and other similar types are indeed very cumbersome when compared with today's mobile sets utilising transistors. It was only near the end of the last World War that valve miniaturisation made further reduction in set size possible. The real obstacles, valve failure, heavy power drain, and heat dissipation, persisted until the appearance, some years later, of the revolutionary transistor device.

This remarkable device entered practical radio as a result of scientific investigations carried out at America's Bell Telephone laboratories. A trio of scientists, William Shockley, Walter Brattain and John Bardeen, were conducting research on electrical behaviour of surface atoms in certain elements when they became curious "about the ability of electricity to flow across the surface of a semi-conductor".[92] The follow-up of their interest invented the transistor. This was announced on 22nd June, 1948.[93] On that date a new device to regulate and control electrons in a wireless circuit was born, and the transistor era began.

When the transistor was announced it had very limited applications in radio and, as far as wireless broadcasting was concerned, it was "an unpredictable device".[94] Since then, it has developed into a component which can be employed in a wide variety of wireless circuits.

Bearing some resemblance to the triode vacuum tube inasmuch that it has three elements and is capable of generous amplification, the transistor possesses many superiorities when compared with the vacuum valve. These advantages stem from the minute size of the transistor itself and its dependence upon only low power sources for operation. Not having to withstand high voltages makes possible miniaturisation of other components as well, and, together with added features, the use of the transistor in wireless communication has taken mobility to a degree never before envisaged, a mobility which has been made possible by reduction in general set size without loss of performance.

Because of the lack of heat generation in transistors, wide spacing of parts is no longer necessary. Again, because of only low power operation some parts necessary in high power receivers are now redundant. Their removal simplifies circuitry and further reduces size.[95]

Another consideration which makes for mobility in transistor receivers is the smallness of batteries required. As they use only low voltage, and draw minute current, small batteries can power transistor receivers effectively. Ordinary torch dry cells are adequate, but generally special shape batteries are fitted to suit the contour of the container housing the wireless set.

[92] United States Information Service: "Twelve Inventions that Changed the World"; p.26.

[93] Ibid.

[94] Hurst, R. N.: "Introduction to Junction Transistors"; a journal issued by the Radio Corporation of America, June 1959; p.1.

[95] Valve wireless sets use quite bulky power transformers or large batteries, but not so transistor sets.

In many cases, due to the very low current drain of transistor-operated receivers, battery life is long; often as long as the normal shelf life of the dry-cell batteries. This is in direct contrast to the No. 11 Wireless Set, which had a considerable current drain even when used as a receiver only, and in which the battery life, from full charge to stop, would be about eight hours, a time roughly one hundredth of the effective battery life for a transistor receiver giving equally effective performance.

Transistors were first used in commercial-type broadcast receivers. The reduction in weight and size was dramatic even when compared with miniature valve type portables. By 1957 the smaller transistor sets were much in favour for their mobility. This appeal has steadily increased. Simultaneously improved production techniques have made for the production of smaller and even more robust wireless sets. One example of these techniques is the innovation of printed circuitry. Under this arrangement connection between parts of the wireless set is made through metallic lines stamped onto a base board to which necessary components are affixed. In this way the danger of loose wiring or frayed leads, and consequent failure, is obviated. A much more robust job ensues.

Transistors lend themselves to use in low power transmitters. There they can be utilised as oscillators, thus replacing larger valves, and also prove highly satisfactory in amplifying audio power from a microphone. They do, in fact, have a distinct advantage over valves for this latter function. Such is so because of the absence of hum noticeably associated with valve amplifiers due to heater-cathode leakage. Transistors also have a very low noise level when compared with valves used as audio amplifiers. This fact assumes importance in lower power mobile equipment.

One of the outstanding benefits of transistors in mobile equipment is the reliability of the transistor itself. They seldom fail, and stand up to rugged use in situations of strain, stress and shock. They can be made impervous to weather and even operated under water.

When transistors were first developed they were only capable of low frequency operation. Since then, new construction techniques have been developed which make possible the manufacture of silicon transistors equal to very high frequency operation up to a maximum of three hundred megacycles. This is an indication that the embargo on even higher frequency operation and higher power operation may be lifted by further developmental techniques. Consequently the use of transistors in wireless equipment will extend.

APPENDIX 3

PRINCIPLES OF TRANSISTOR OPERATION

In general, the transistor can be compared to a vacuum tube. The base is similar to the grid of the vacuum valve in that they both serve to control electron flow through the device. The emitter and cathode both supply the source of electron flow. The collector of the transistor and the plate of the valve are similar inasmuch that they are both normally part of an output circuit. However, these similarities are only approximate. It must be remembered that, whereas the operation of an amplifying valve depends upon conduction through a vacuum, in a transistor, the fundamental process of conduction depends upon the passage of charge carriers in a semi-conductor. Also, it is as well to state that whilst the grid of a vacuum tube and the base of a transistor do approximately correspond, they also differ. A vacuum tube grid in normal operation draws no current; the total cathode current flows in the plate circuit. This is not so in a transistor, as the base shares the emitter current between itself and plate. Hence the base has an appreciable current flowing in it.

Information gleaned from:

(i) Wolfendale, E.: "The Junction Transistor and Its Application"; Heywood and Company, London, 1958.

(ii) R.C.A. Service Company: "Transistor Fundamentals and Applications"; Radio Corporation of America, Camden, U.S.A., 1958; a 43-page journal.

☆

DX-PEDITION TO NORFOLK IS.

(Continued from Page 11)

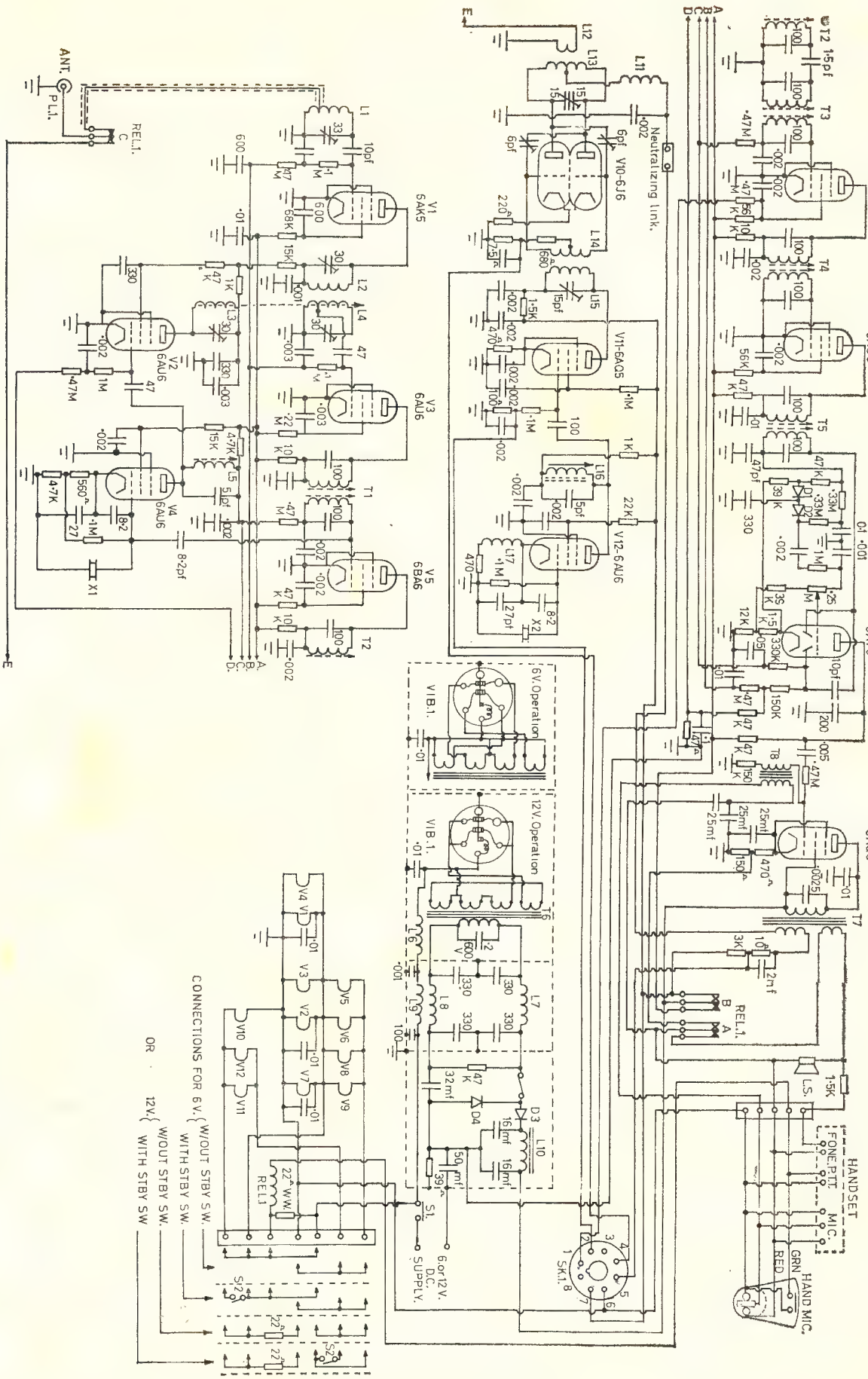
I must pay tribute to the skill of the great majority of DX operators whom I had the pleasure of working. With very few exceptions they heeded the request for no repeat QSOs on the same band/mode and instructions regarding the frequency on which to call. Their co-operation regarding QSL exchange was also appreciated.

The last QSO of the DX pedition was made on Saturday, 30th January, with a German station. Owing to a change in the airways flight schedule, departure was quite a hurried affair, and we felt very pleased that the 40-metre ground plane had already been dismantled on the previous day in anticipation of such an event.

Back home at Templestowe, there were approximately 400 air mail QSL cards neatly stacked according to date of arrival by my young daughter. The number was to increase as the days went by. Through the co-operation of the printer who had done an excellent job with my own VK3TL card, several hundred QSLs were made ready for despatch within a week of my return. At this stage I must acknowledge the wonderful help of my wife Shirley who, in addition to keeping the fort while I was away, gave assistance as my QSL manager and was so tolerant of the whole adventure. I am appreciative of the co-operation of the Australian P.M.G. Department in issuing the call VK9TL in response to my request for it, and to the Norfolk Island Tourist Bureau for the supply of some very beautiful postcards of the island in natural colour. Recipients of the VK9TL QSL card will also appreciate this kind gesture of the Bureau.

My thanks to Galaxy Electronics, of Iowa, U.S.A., to Arie VK2AVA and Bill VK3AHT, who kindly gave me the loan of equipment, and to the many Hams on all continents who endeavoured to assist me establish contacts in their areas.

For those interested in figures, the number of QSOs were 3,021 and the A.R.R.L. country tally, 127. Approximately 60% of the QSOs were made with the Morse key. The DX-pedition made a greater inroad into my banking account than I had anticipated; but the trip was made worthwhile, quite apart from the aspect of adventure, by the many notes and letters of appreciation of DX enthusiasts for whom Norfolk Island was "a new one". ●



SIX-METRE TRANSCEIVER

As a service to readers, "A.R." has drawn the circuit of the "Pye" Reporter. No other details of this equipment are available direct from Messrs. Pye Pty. Ltd.

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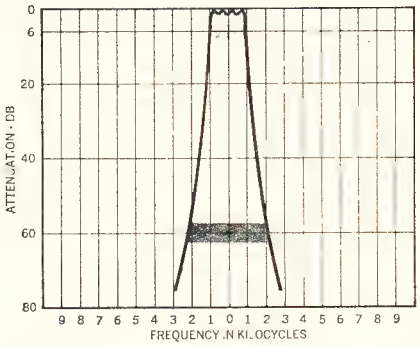

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THE CRYSTAL CHECKER*

E. H. MARRINER, W6BLZ

SURPLUS crystals are cheap! Every surplus store has a crystal grab table set aside, piled high with surplus crystals. They come in every size, shape, frequency and holder. Mail order catalogues and flyers are filled with crystal advertisements. Some dealers sell nothing but surplus crystals which they have bought by the carload lot.

These crystals, now available, may be good, bad or broken, but at a bargain price of ten cents each. There are still plenty of them on the markets. Now would be a good time to stock up for future use. They can be used later in transmitters, receivers, oscillators, mobile converters and many other projects.

As the buyer is aware, these crystals have been around a long time but are generally in good condition. Some may need only cleaning of the crystal to make it work. The best way is to check them out before you buy them. You can either take a plastic bag-full home with you or check them at the store with this crystal checker. Just ask the clerk if you can plug into the wall outlet, insert in your selected crystals and check them out before you buy. You might be surprised by the enjoyable afternoon you can spend searching for these goodies at ten cents apiece instead of $3.00 each at a regular store.

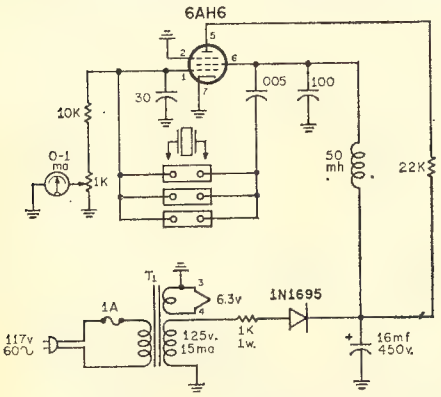


Fig. 1.—Circuit of the Crystal Checker. All resistors are ½ watt unless otherwise noted, and all capacitors less than one are in μF., greater than one are in pF.

Someone is sure to ask, "Why not a transistorised crystal checker? Why bother with a checker that has to plug into the wall socket?" Many crystal oscillators using transistor circuits are very critical to the frequency. Parts have to be tailored for just that frequency and generally they do not oscillate over a large frequency span. This tube type crystal checker is much more versatile, not only checking crystals through the 2 to 30 Mc. range, but also testing the ones in the 200 Kc. to 500 Kc. range, or fundamental crystals.

After all, the tester isn't much bigger than a transistorised unit and what could be easier than just plugging it into the wall sockets, inserting your crystal and reading the meter?

• The simple device described was built to determine the condition of the many crystals around the shack. It may also be used as a calibrator for band-marking and as an accurate signal generator for aligning i.f's since it is designed to function at the low end of the spectrum as well as the high end.

OPERATION

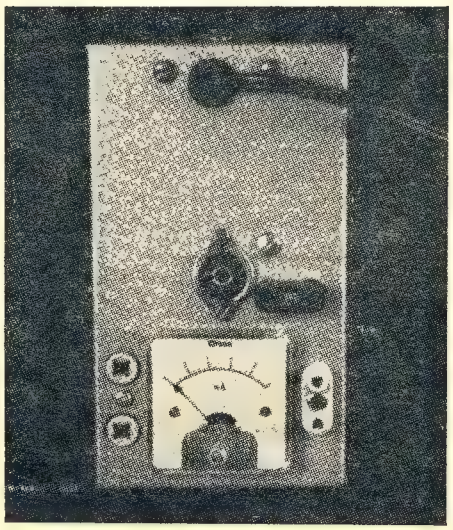
This circuit employs a 6AH6 tube in a parallel Pierce oscillator circuit. By using a large radio frequency choke in the screen lead, the circuit will oscillate at very low frequencies besides the high frequency range. When the crystal is plugged into the socket and the circuit oscillates, the grid circuit will draw grid current which can be read on a meter.

A good oscillating crystal will cause from 0.5 mA. to 1 mA. of grid current. By taking a good crystal and checking the current, you will see that this can be used as a reference for other crystals. A bad crystal will produce a low current and the following is a scale of activity:—

0.0 to 0.2 mA.—Bad Crystal.
0.2 to 0.3 mA.—Fair Crystal.
0.3 to 1.0 mA.—Good Crystal.

CONSTRUCTION

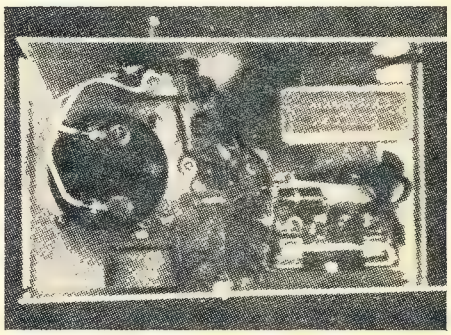
There are no particular precautions to be observed in building this circuit. All of the parts fit nicely into a chassis box, 3" wide, 5" long and 2" high. The only thing to watch out for is to select a crystal socket or sockets for the type of crystals you think you might like to test. The FT-243 is the most common type. Just leave enough room when locating the crystal sockets so they can be inserted without hitting the tube or meter.



Front view of the Crystal Checker showing the parts location. Note sensitivity pot. on the right side of the box.

TESTING

When the circuit is finished, select a crystal that you know is active. Put it in the circuit and set the 1,000 ohm potentiometer so that the meter reads 1 mA. When other crystals are put into the circuit they can be compared with this meter reading.



Bottom view of the Crystal Checker showing parts location. Picture was taken before the extra crystal sockets were added. Note the simple but compact wiring.

Test gear like this is worth having around the shack since it can be used for a calibration oscillator as well as a crystal checker. There are all kinds of possible uses such as aligning receivers, keeping a check on Amateur band edges, or even keyed in the cathode lead and used as a code oscillator when listening to the crystal frequency in a receiver with a b.f.o. Why not give it a try? •

☆

BACK ISSUES OF "A.R."

We have a limited quantity of back numbers available at 1/6 per copy post paid, or 1/- each if collected. If your files are not complete, write to the Secretary, W.I.A., P.O. Box 36, East Melbourne, immediately. The copies available are:—

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* Reprinted from "CQ," July, 1964.

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From Our Reading

"QST," December 1964

No Tubes—Four Watts—Six Metres is a description of a fully transistorised transmitter and modulator and provides some interesting answers to the problems encountered.

Transmitter Keyer/Muter for Collins S Line will interest owners of this equipment who would like to operate break-in c.w. without relays.

A Low-Cost Transistor Mobile Power Supply describes a supply capable of supplying 35 watts continuous duty with an efficiency of 92% under full load, but the toroid core may be difficult to obtain here.

High Power Version of the Keyed Antenna Relay may be the answer to those having trouble with relay contacts welding together, but again parts may be difficult to obtain if exact duplication is intended.

First Maxim Award to Reinartz summarises the contributions that the late John L. Reinartz made to short wave radio.

The Antalo is an unusual development of the halo antenna and purports to give up to 9 db. gain. Mobile enthusiasts may even try one on their cars.

A Easy-to-Make, Coax.-Fed, Multiband Trap Dipole gives all the information necessary to construct one of these topical antennae.

Extending the Range of the BC221 Frequency Meter details the modifications necessary to extend the range of this fine piece of equipment up to 200 Mc., still maintaining the accuracy of the normal ranges.

A Heterodyne-Type Transmitter for 144 Mc. describes an interesting way to provide a v.f.o. control transmitter for 2 metres suitable for a.m., c.w., or s.s.b. Very few will duplicate this equipment, but the ideas provide food for thought.

Recent Equipment reviews the Lafayette HA-30 receiver.

"CQ," December 1964

The ARC-Port describes another way of using the ever-popular Command receiver, this time as a portable c.w. transmitter-receiver and could be ideal for those interested in a small rig for holidays.

More output from your Hammarlund HX-50 may interest owners of this equipment.

A Transistorised HV-LV Mobile Supply is an inexpensive d.c. to d.c. converter providing outputs of 100 and 250 volts suitable for receivers, and 800 volts for transmitters at 250 mA. The size of 4" x 6" x 8" should not be a drawback considering the output.

R.t.t.y. from A to Z is part 5 of the series.

Eliminating t.v.i. in Modern Transmitters deals with the problems encountered in a Hallicrafter HT37, but should provide answers for other commercial gear as well as home-brew equipment causing t.v.i.

A No Clobber Converter for 6 Metres has been designed to achieve the maximum in cross-modulation and overload characteristics and should be a must for those suffering from Channel 0 interference.

Thevenim's Theorem and Its Applications is another method of determining the voltage across a certain component.

Automatic Carriage Return for the Model 15 will interest only the r.t.t.y. enthusiasts.

"CQ" Reviews gives a rather comprehensive review of the Heathkit SB-400 Transmitter.

More on the 6BLZ Special suggests some improvements to this excellent receiver—described in "CQ," July 1964.

R.S.G.B. "Bulletin," December 1964

A Wobbulator for Communications Receiver Alignment describes a complete unit with continuous coverage over most desired frequencies.

The G3IAS Transistorised Electronic Keyer gives a detailed description of a rather sophisticated keyer and also describes the paddle.

R.S.G.B. International Radio Communications Exhibition gives an interesting summary of some of the latest commercial and Amateur equipment now available in England.

Relay Supplies, simple style, shows that it is not always necessary to have a separate relay power supply.

If you are a member of the W.I.A., your Divisional Secretary will supply you with the Badge. It is your privilege to wear.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to the
EDITOR "A.R.,"
P.O. BOX 36,
EAST MELBOURNE, C.2,
VICTORIA.

NEW CALL SIGNS

DECEMBER 1964

VK2ZJ—E. J. Roberts, 26 Gammell St., Rydalmere.
VK2ACW—C. O'Connor, 53 Ocean St., Windang.
VK2BAM—I. M. Bartlett, Portion No. 683, Princes Highway, Waterfall.
VK2BDG—D. G. Buckman, 26 Winifred Ave., Epping.
VK2BMK—M. K. Francis, Hill St., Scone.
VK2BRM—R. V. Miles, 9 Croydon St., Lakemba.
VK2BRW—W. R. Beveridge, 18 Murdoch St., Turramurra.
VK2ZEO—A. W. Beasley, 328 Cressy St., Deniliquin.
VK3QO—K. McL. Roberts, 32 Redesdale Rd., Ivanhoe.
VK3ASJ—S. J. Excell, 33 Girlon Cres., West Geelong.
VK3AVS—D. G. Warring, 158 Melville Rd., West Brunswick.
VK3ZGN—A. E. Osland, 159 Bent St., Northcote.
VK3ZPR—I. R. Phillips, 179 Abbott St., Sandringham.
VK3ZZO—R. J. Callander, 383 Warrigal Rd., Burwood.
VK4AJ—A. T. Newell, 1223 Ipswich Rd., Moorooka, Brisbane.
VK4DE—K. E. Darch, 45 Goldfinch St., Inala.
VK4HW—D. J. Hutchins, Lake Manchester, C/o. P.O. Mt. Crosby.
VK4IO—Ipswich & District Radio Club, 77 Darling St., Ipswich.
VK4MI—I. Mackellar (Wide Bay Amateur Radio Club), Station: Avoca St., Bundaberg; Postal: 231 Bourbong St., Bundaberg.
VK4QH—Queensland Branch Hdqrs. Boy Scouts Assn. Radio Club; Station: 132 Wickham St., Valley; Postal: P.O. Box 50, Broadway, Brisbane.
VK4TO—D. C. Lynch, 63 Barolin St., Bundaberg.
VK4ZLD—L. A. Dobbs, 202 Horton St., Koongal, Rockhampton.
VK5ZTM—T. G. Marshall, 47 Ayre St., South Plympton.
VK6KT—K. Tsiaprakas, 24 Kennard St., South Perth.
VK6NS—N. F. Schroeder, Mowanjum Mission, Box 37, Derby.
VK7ZBC—B. H. Christensen, 104 St. John St., Launceston.
VK7ZBK—R. J. Geeves, 47 Bowden St., Glenorchy.
VK7ZBW—B. R. Waldron, 62 Connaught St., Launceston.
VK7ZDL—D. E. Llewelyn-Butcher, 19 Hunter St., Launceston.
VK7ZTX—B. N. Muir, 126 Montagu St., New Town.
VK9CR—R. J. Conway, Cocos Island.
VK9ZFE—F. E. Earley, C/o. Supr. Technician, Radio 9RB, P.O. Box 301, Rabaul.
VK0GW—G. W. Webster, Mawson, Antarctica.
VK0KH—K. E. Hicks, Wilkes, Antarctica.
VK0MC—J. F. McKenzie, Wilkes, Antarctica.
VK0TO—T. Olrog, Macquarie Island, Antarctica.

☆

STATISTICS

Some interesting non-amateur statistics: There are now 2,380 t.v. transmitting stations in the world—nearly six times as many as in 1954 . . . in the same decade the number of sound broadcasting stations has nearly doubled, and is now 12,600 . . . At the receiving end, the U.S.A. leads on t.v., with 60 million sets in 90 per cent. of the homes; Japan comes second, with 13 million sets, which represents 95 per cent. of Asia's total. Finally, in the ten years, 1954-64, the world total of radio receivers has risen by 60 per cent. and that of t.v. receivers by 300 per cent. (population growth during the same period has been about 26 per cent.)

—"World Communications," U.N.E.S.C.O.

SWL

Sub-Editor: Chas. Aberneathy, WIA-L2211
30 Urunga Parade, Miranda, N.S.W.

It is with pleasure that I have to make it known that the Moorabbin Radio Club have decided to issue a certificate to S.w.l's. The conditions are as follows: For Australian listeners (excluding VK9) QSL cards from 10 Club members are required. For overseas listeners, QSL cards from 5 Club members are required. The Club would prefer QSLs themselves, but will accept in lieu a certificate from an authorised person confirming the existence of the cards. Within Australia this person is to be either the President, Secretary or Treasurer of the local branch of the W.I.A., or for overseas listeners, the equivalent officers of the local branch of the appropriate national organisation.

Cards or their equivalent can be sent to the Certificate Officer, Moorabbin and District Radio Club, 17 College Grove, Black Rock, Victoria. When sending cards (in Australia) include a stamped addressed envelope, and when from overseas an addressed envelope plus one I.R.C. for the return of cards.

On behalf of our members, I must thank the above Club for making their certificate possible as I know their fine gesture will be well received by all S.w.l's.

During February, I received offers of assistance from three different States, and it has been arranged for these chaps to accept s.w.l. problems from our members living in the State concerned. This we thought would ease the congestion at this end, and so speed up replies to our members. So if you have a query, pen it and enclose a stamped addressed envelope for your reply to:

N.S.W.: Sid Underwood, 99 West Botany St., Arncliffe, N.S.W.

Victoria: Roger Harrison, 1 Mary Street, North Balwyn, Vic.; or Harry Major, 30 Seaton St., Glen Iris, S.E.6, Vic.

Western Aus.: Peter Drew, 84 Adelma Rd., Nedlands, W.A.

From Bryan L6028 comes propagation details as heard from the V.O.A. station on 21/2/65, for 1965:

160 mx: Good openings if patient enough.
80 mx: Late night time DXing.
40 mx: Night time best for DX.
20 mx: Will open longer in the evenings.
15 mx: Day time DX will increase in 1965.
10 mx: Will open for DX in October 1965.

TRANSFORMERS

Two coils coupled by mutual inductance constitute a transformer. The magnetic field may link the coils either through an iron core or an air core, the latter usually being used for radio frequencies. The coil connected to the a.c. voltage supply is called the primary winding, the other coil, which is ordinarily connected to a load, is called the secondary winding. A transformer is useful for transferring electrical energy from one circuit to another without direct connection, and for stepping up or stepping down voltage or current levels.

In a transformer having a closed iron core practically all the magnetic flux lines produced by the primary winding link every turn of the secondary winding. Such a transformer is almost perfect, since it has practically no leakage flux. For a given magnetic field, the voltage induced in the primary coil is proportional to the number of turns in its winding, and since the secondary coil of a perfect transformer is in the same field, the voltage induced in the secondary is proportional to the number of secondary turns. Hence, for a perfect transformer, the ratio of primary to secondary voltage is equal to the ratio of the number of turns in the two windings.

If the magnetic fields in the primary and secondary of an iron core transformer are to be equal, their respective magnetising forces must be equal. The magnetising force of a coil is expressed as the product of the number of turns times the current flowing in the coil (called ampere turns). Consequently, the primary current multiplied by the primary turns must equal the secondary current multiplied by the secondary turns.

By comparison with the previous expression, it is apparent that the current is stepped down, when the voltage is stepped up, and vice versa.

S.W. RECEIVER

If you own a standard broadcast receiver it is possible for you to acquire a good short-wave receiver with relatively little work and at no great cost. A broadcast receiver contains almost the same parts as a s.w. receiver, and by adding a self constructed preselector to make up for its deficiencies in regard to sensitivity, selectivity and frequency range, you will obtain a very good short wave receiver.

NEW SOUTH WALES

There is not much activity in this State at the moment, maybe with the beautiful weather they prefer swimming to listening these days. If so, they have missed some really good DX on 20 metres.

Sid L2258 has erected a vertical antenna, which he claims is the most, and has logged OA4, GW3, 9M4, VU2, YV5, DL6, YK1, UB5 and many others. I am pleased to hear that you have started the A.O.C.P. course, and I wish you well.

Henry L2271: I believe that you are back in Sydney. Just could not stay away from your old mates, hi. How about a few words of your doings in the near future?

Mac L2174: Many thanks for your consistant support. I only wish that we had many more as reliable as you. That tape on sunspots should be of interest, so bring it to one of our meetings. The L3 boys send their regards to you.

Ray L2287: I trust by now that the idea of getting going on v.h.f. has developed, as you shall not be disappointed for it is a most interesting band. Recent loggings: CR9, ZP5, UN1, UL7, UQ2, OH2 and ZS6, with QSLs from XW8, VU2, OH2 and ZS6.

Alan L2018: Bad luck with the AR7, but I guess that 7 Mc. on the other one is something at least to tide you over until a better rx comes along. I do hope that the wire arrived and it shall be of some value. Best of luck with the A.O.C.P. course.

Arnold L2291 is a member of the South Broken Hill Radio Club (2AOD). He says that they are on the air each Friday night and would like to make skeds with other radio clubs on the 20 or 80 metre bands.

VICTORIA

The Victorian group got off to a good start for 1965, when an article in the daily paper about the group's activities produced another 30 new faces at the March meeting. We now have a full roster for our Sunday broadcast readers and hope that all members are listening for details of group activities. Country members who are down in the big smoke are reminded to call in to the club rooms on the second or last Friday of each month to say hello to the fellows. The group now has its AR8 rx installed in the club rooms, and will be available for members to listen on at the meetings. We hope to have a suitable aerial erected in the near future if we can find space among the mass of sky wire on the roof. We regret that a lot of members did not have their numbers recorded in the Call Book, so to prevent this happening in the future, we are working now on the list for the next Call Book.—Ian L3006.

Many thanks Ian for your monthly contribution of your Group's doings. This I can assure you is much appreciated.

Noel L3101: I do trust that Gwen and yourself have a very enjoyable trip. Okay on your K5 QSL; yes, they can take a long time to make the grade. Pleased to hear you both enjoyed the films.

Greg L3138: At long last you received your R.H. award 1963/64, congrats. That score of yours in the N.F.D. is really something. Recent QSLs: VR2, PA0, VK9, HM2.

Eric L3042: I hope that Jean and yourself have a nice holiday in VK5. Heard on 3.5: VE3, KH6, JA3, JA7, W6, W8; on 7 : DJ0, GI3, G6, GB2, OK1, 9M4, OE1, UG6, VS9, VR4; on 14: AP5, FO8, FK8, TM5, VS9, 4S7. QSLs to hand: DL, EI, HA, HL, UA9, UT5, UQ, 4W1, YO, 9M4, etc. Eric has suggested that I mention that action has been commenced on two new awards to be made available to s.w.l's. So later in 1965 we should have yet a few more awards to work for.

SOUTH AUSTRALIA

L5065: Alan, I'm very pleased to hear that you had such a good time on 6 mx when you logged all VK States. Congrats. on getting your award for the N.F.D. 1964. Latest QSLs to hand: VQ8AR and JA1AEA.

Brenton L5069: Pleased to hear that you both arrived home safely, also that you had a nice time in Sydney.

Tim L5067: That T2FD antenna sounds pretty good to me. Have you ever tried a vertical? Sid L2258 has had excellent results, and if you are interested send him a s.a.e., and he will gladly send you the info.

Tony L5073: I trust by now those books have come to hand for the radio club and that they are of some value.

WESTERN AUSTRALIA

Bryan L6028: Thanks for the propagation details OM. Those little items of interest are very helpful. Heard recently, 20 mx: ET3, CX9, HS1, LA7, KX6, 4X4, 5A4, 7Q7, KA8, 7Z2; on 15 mx: EP2, 9K2; 10 mx: KR6.

Alan L6029: I do hope that you are back home again after your stay in hospital and that all is well. Bryan told me that before your accident that you had logged: YV5, VS9, HZ3, GM3, SM5, MP4, 5A5, UD6, EI3, PY3, XW8, FB8, FR7, OA4.

Geoff L6030: Thanks for your letter OM. Added to your log this month I notice are: KC4, KC2, CR8, HB9, KH6, KJ6, YO4, PJ3, KL7, SP5. Quite a nice variety.

Peter L6021: I notice that you are still getting amongst the DX to the tune of: KS6, VU2, SP4, HK4, OA4, DL4, 9J2, UV9, HA1, OE6, F3F, ET3, AC5, KS6, OZ2, etc. QSLs from: G8, LZ, OA4, OK1, OK2, PA0, K0, 4X4, 5N2, and 7GI.

TASMANIA

Although there is not an s.w.l. group in VK7, any person interested in getting an L number in that State can join the VK7 Division by applying to the Secretary who will issue listeners' numbers.

Greg Johnson: Those scraps of information as you call them are very welcome indeed, so keep sending them. I only wish more of our members would do likewise.

GENERAL

For the card swappers: Here are two more JA S.w.l's: JA1-1953 and JA1-3893. Send your cards to Yutaka Tanaka, 66-1 Bancho, Koshien, Nishinomiya, Hyogo, Japan.

Well chaps, that's about it for this month, but remember, tools don't cause accidents, it's how they are used. 73, Chas L2211.

S.W.L. DX LADDER

	Countries Conf.	Countries Hrd.	Zones Conf.	W States
E. Trebilcock	285	293	40	50
P. Drew	158	258	35	34
D. Grantley	126	282	39	35
M. Hilliard	91	241	33	14
M. Cox	89	225	33	23
G. Earl	83	160	33	11
L. James	76	174	30	14
R. Kearney	70	146	32	—
C. Aberneathy ..	65	105	33	14
W. Smith	58	167	27	7
N. Harrison	60	176	31	37
A. Raftery	31	148	15	6
R. Harrison	20	70	17	5
R. Oats	17	40	13	—
B. Prosser	17	136	8	2
B. Mackintosh ..	10	55	10	1

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Publications Committee Reports That . . .

To the 15th March correspondence was received from the following: VKs 3ZC, 3KB, L4018, L3102, L5067, 2AXS, 6ZDM, 5JE and Ted White, plus technical articles from 5TN, 2AMA, 3ZGZ and 7LE, and a note from M. T. Done at Gawler.

Due to the lateness of the Publications Committee meeting caused by members being on the W.I.C.E.N. net for the bush fire period, it has not been possible to publish all correspondence in this issue. Readers will appreciate the unusual nature of the delay and will, we trust, be tolerant of the absence of their letters.

This report is very brief due to the reasons stated above, and in our next issue all will return to normal with a more comprehensive report on your committee's activities.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

DX NOTES

Sub-Editor: H. A. Behenna, VK5BB,
14 Stanley St., Crystal Brook, S.A.

Wel this month will be about the shortest DX page on record. Firstly, we are moving to a new QTH. We are in the process of preparing the above. Consequently Amateur Radio has had to take a back seat. And will have to remain so over the next couple of months Over the past month my nightly skeds have stretched out to fortnightly ones.

I make this appeal to the good hearted ones to send in their reports. This will relieve the situation no end here. This month I have received the staggering amount of two reports, which further complicates the DX reporting from here.

From Ken VK3TI: Ken is back from Norfolk Island and has 800 QSLs waiting to be answered. 3,021 QSOs were partaken of, and 127 countries were contacted.

Among the best were the following: AP5SQ, AP5HQ, BV1USG, CP5EZ, CR4AJ (Cape Verde Is.), CR7GF, CR9AI, CRCT, CX1AAC, CX1AAP, CX7CO, DU, EI3S, EI9V, EP3RO, EP2EI, EP-2AU, ET3USA, FK8, FO8, HC, HL9, HM1AB, HM1AQ, HP1IE, HR1RP, HS1J, HZ3TYP, IT1TAI, IT1AGA, IT1ZGY, IT1LOP, IT1RAI, JT1AJ, KG6SB, LX1CO, M1B, MP4BCC, MP-4BEK, PY, PZ1CP, SL5TRS, SL6BH, SV1AE, SV0WF (Rhodes), TI, VP7NS, VP7CX, VP7BG, VP9FH, VQ8AM, VS9, XW8, YN, YS1SRD, YS1RRD, YS1RFE, ZC4CZ, ZC4GT, ZD5R, ZS8G, ZP5CP, ZP5EC, ZP5LS, ZP5KT, ZP5BC, 3A2CP, 4U1ITU, 5A1TW, 5A1TR, 5A1TT, 5Z4ERR, 5A2TR, 6O6BW, 6Y5MJ, 7Q7PBD, 9M4, 9M6AA, 9M8EB. All the above worked on 20 metres.

On 40 metre c.w. CE0AG (Easter Is.), CX7BY and EA8CM (Canary Is.). Many thanks, Ken.

From Syd VK2SG the following: 5X5JG will be closing down in early March from Uganda and anyone who has not received his card should write to his home address:

J. Marland,
C/o. Mooney, 7 Moorcroft Street,
Kirkholt, Roshdale,
Lancs., U.K.

Regarding the bands, says Syd, he worked mostly 20 metre c.w. and s.s.b., though I do look at 15 during the day time, but 15 mx is pretty dead, only W and JA. 20 mx is fairly good for most of the day both to the east and north.

At nights Europe via the short path and North Africa firing about due West, long path to Europe is a bit spotty, although the path due East seems to be the best for mid afternoon and day time to Europe and the Mediterranean area. South Africa is rather poor for normal operating, though 0500 to 0600 seems fair and 1800 again is fair but there are no real booming signals coming through.

VU2NRA has been heard and worked twice while VQ8AMR has been heard. Owing to the number of stations that will call him on his own frequency, he does not listen on his own frequency, but only 15 kc. up or down as the mood takes him. VK4TE on Willis Island is on every week-end and really lifts the receiver off the bench.

Very special thanks to Ken 3TL and Syd 2SG for their reports this month. 73, Bert VK5BB.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK5MS	24	310	VK2ADE	65	231
VK5AB	45	310	VK2JZ	61	224
VK6RU	2	306	VK6KW	4	211
VK6MK	43	302	VK3WL	14	211
VK3AHO	51	297	VK4HR	12	208
VK4FJ	21	283	VK3ATN	26	204

New Member:

VK3LW	66	107

Amendments:

VK3TL	62	196	VK2AGH	55	113

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3KB	10	328	VK2AGH	71	274
VK3CX	26	305	VK6RU	18	262
VK2QL	5	301	VK3AHQ	79	254
VK4FJ	29	298	VK2EO	2	250
VK2ADE	81	298	VK3ARX	66	247
VK3NC	19	286	VK3YL	39	240

Amendments:

VK4HR	8	235	VK3TL	78	203

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK2ADE	28	322	VK2ACX	6	300
VK6RU	8	311	VK3NC	77	287
VK4FJ	32	307	VK4HR	7	254
VK2AGH	83	305	VK3JA	43	252
VK6MK	74	304	VK2VN	18	243
VK3AHO	76	301	VK7LZ	23	242

Amendment:

VK3TL	85	229

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YOUTH RADIO CLUBS

In the December issue of "Wireless World," there is an account of the big International Communications Exhibition in London. In his opening address, Mr. G. M. Stone, President of the R.S.G.B., stressed the need for attracting young people. He said, "We feel that in the past our Society has not done enough to encourage Amateur Radio as a hobby among boys and girls, and we are now looking at ways and means of taking Amateur Radio into secondary schools. In the first instance, we plan to do this through schoolmasters who are members of our Society. The R.S.G.B. has formed a new Education and Training Committee." The Soviet Union, probably more than any other country, officially encourages young people to become interested in Electronics by its "Radio Circles" in elementary schools and in club houses of its Young Pioneers (ages 9-14). In China, there is a very large organised scheme of teaching simple electronics in primary schools, followed by heavy emphasis in secondary schools.

Having survived the opening flurry of the new school year, most club leaders will now be in business. When they can find time they should notify the State Supervisor that the club is in existence and also send out some news (perhaps a little in my direction). More power to your arms!

Our club at Lyneham is again very pleased with a full A.O.C.P. success, this time by Andrew Davis, younger brother of Roger 1RD. Andrew is 15½ years, so will have to be patient. Andrew is the fifth A.O.C.P. in our group in recent years. He is in Leaving year but is finding a little week-end time for building a 7 Mc. transceiver. Would club leaders please send me details of other successes in the January exam?

Ken Matchett, 3TL, somehow found time to print his February Newsletter. The Science Teachers' Association has been informed of the Y.R.S. Why not a special pressure on the Teachers' College, as in Sydney? Phil Lavery, instructor at the Australian Postal Institute, has received his A.O.L.C.P. Christian Brothers Bundoora Club is to use 3ZFR as station call sign.

VK2 items are plentiful as usual. Jim Webster at Birrong High School, regularly produces a Newsletter of 8 (!) foolscap pages. Special mention must be made of Gary Tippett, a 1964 third form student at St. Edward's College, Gosford, who gained full A.O.C.P. towards the end of last year. This is the first instance of a third former passing. Congratulations to Gary—and this result should encourage many more round Australia. First candidate to gain a Radio Telephony Operator's Certificate is Warren Donald, of Punchbowl Boys' High, instructed by Allan 2ABA. For 1965, there is a prize list of 18½ guineas, three pennants, a trophy, and many parcels of radio components for a total of 15 competitions in VK2.

Hints to club leaders: It's a great thing to help the family budget of your young devotees by scrounging as much as you can for them, but take care that your hard-won gear does not vanish into thin air and force you into perpetual motion scrounging. At any age, there is a tendency to grab, even if there is only a vague idea of using it in 1970. Keep firm control by carefully registering all gear taken by each one and checking that it is properly used or returned in a reasonable time. While some will construct more than others, see that there is a fair share for all. You may even have to be wary of parents who consider that, if the boy makes small alterations on a valuable piece of gear, he automatically owns it. Our social aims will not be realised unless we teach the proper club spirit of fair shares and everybody help the other one. 73, Ken 1KM.

"CQ" WORLD-WIDE S.S.B. CONTEST

APRIL 10-11, 1965

(i) **Contest Period**: 1200 G.M.T., Saturday, 10th April, to 2400 G.M.T., Sunday, 11th April, 1965. Only 24 hours out of the 36 hours permitted for single operator stations. The 12 hours of non-operation can be taken in two periods, at the beginning, end or during the contest. It need not be in two equal periods, but must total a minimum of twelve hours and be clearly indicated on the log.

(ii) **Bands and Participation**: All bands 3.5, 7.0, 14.0, 21.0 and 28.0 Mc. can be used but operation is confined to two-way sideband emission only.

(iii) **Type of Competition**: 1—Single Operator: (a) all band, (b) single band. 2—Multi-operator: (a) all band only.

(iv) **Equipment**: Only one transmitter may be operated at any one time, and competitors may use the maximum power permitted under the terms of their licence. (Multi-transmitter operation is NOT permitted in this contest.)

(v) **Serial Numbers**: The contest exchange will be the usual five-figure serial number, RS report plus a progressive three-digit contact number starting with 001 for the first contact.

(vi) **Points**: 1, contacts between stations on different continents will count three points; 2, contacts between stations on the same continent but not in the same country will count one point; 3, contact between stations in the same country will be permitted for the purpose of obtaining a Prefix multiplier, but will have no QSO point value.

(vii) **Multiplier**: The multiplier in this contest will be determined by the number of different prefixes worked. A "prefix" is considered to be the two or three letter/numeral combination which forms the first part of an Amateur station call. (W1, W2A,, DJ2, DL4, GB2, 4X4, 5A1.) Each different prefix may be counted only ONCE during the contest.

(viii) **Scoring**: 1, the score for a single band entry will be the total contact points on that band multiplied by the number of different prefixes worked on that band; 2, the score for an all-band entry will be the total contact points from ALL bands multiplied by the total number of different prefixes worked on ALL bands; 3, a station can be worked once on each band for QSO point credit; however, prefix credit can be taken only once regardless of the band; 4, those sending in a log for a single band will be eligible for a single band award only. If a log shows more than one band, it will be judged as an all-band entry unless indicated otherwise; 5, a station will not be eligible for more than one award.

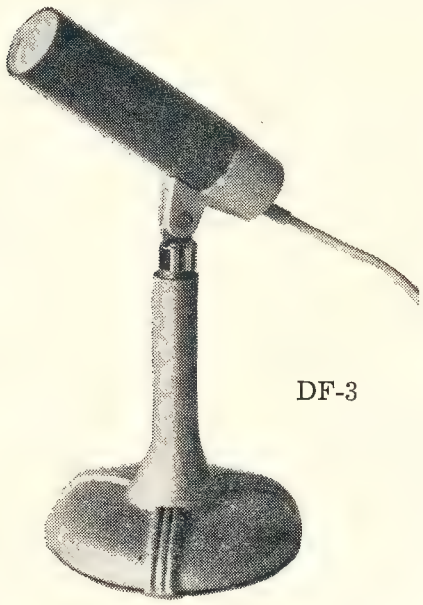
(ix) **Awards**: Certificates will be awarded to the highest scoring single operator station in each country and each call area of the United States, Canada and Australia. 1, for the highest score on each single band; 2, and for the highest score on all bands. Certificates will also be awarded to the highest scoring multi-operator station in the same areas but for all band scores only. (Alaska and Hawaii will be considered as separate countries for both scoring and award purposes.)

(x) **Disqualification**: Violation of the rules and regulations pertaining to Amateur Radio in the country of the contestant, or the rules of this contest, or unsportsmanship conduct will be deemed sufficient cause for disqualification.

(xi) **Log Instructions**: Indicate a prefix only the first time it is contacted. Use a separate sheet for each band and also a tally sheet or report form. All times indicated must be in G.M.T. And the 12-hour rest period must be clearly indicated. All contestants are expected to compute their own scores. Logs should be checked for contact and prefix duplication and proper point credit before they are submitted. Unscored logs will be used as check logs only. A prefix check list is not only desirable but a **must** for proper contest operation. Make sure name and address is clearly shown on each summary sheet, **print or type.** Each contestant must sign a pledge that all rules and regulations have been observed and that the report is a true one. Official log forms are available from "CQ". Send a large size, self-addressed envelope with sufficient postage to cover your request. If official forms are not available use a duplicate form. The size is 8½ x 11 inches with 40 contacts to the page. It is suggested that you send your prefix check-off list along with your log.

(xii) **Deadline**: All logs must be postmarked NO LATER than 30th April, 1965. Send logs to "CQ," 14 Vanderventer Avenue, Port Washington, New York 11050; attention: WW SSB Contest.

FOSTER DYNAMIC MICROPHONES



DF-3

SPECIFICATIONS:

Output Impedance .... 50 ohms or 50K ohms
Effective output level .... —55 db. [0 db. = (one) 1V. Microbar]
Frequency response .... 50 to 15,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm.
Size: 4½" long, 1¼" diameter.
Cable: 12 ft. of P.V.C.
Swivel fits 5/8" 26 t.p.i. Stands.
Colour: TWO-TONE GREY.

Retail Price 50 ohms: £4/7/9 + Sales Tax 10/11
Retail Price 50K ohms: £4/10/0 + Sales Tax 11/3

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In April we expect to have adequate stocks of the following new s.s.b. equipment and accessories:—

- ★ **GALAXY III. 80/40/20 METRE TRANSCEIVERS.**
- ★ **GALAXY V. 80/40/20/15/10 METRE TRANSCEIVERS.**
- ★ **DRAKE TR-3 „ „ „**
- ★ **SWAN SW-350 „ „ „**
- ★ **HEATH SB-200 „ LINEAR AMPLIFIERS.**
- ★ **TOPAZ 600 or 800V., 12V. D.C.-D.C. TRANSISTORISED POWER SUPPLIES.**
- ★ **AZTEC 600/700/800V. „ „ „ „ „**
- ★ **GALAXY „ „ „ „ „ „**

Also the following re-conditioned used sets:—

- ★ **SWAN SW-120 20 METRE TRANSCEIVERS.**
- ★ **SWAN SW-240 80/40/20 METRE TRANSCEIVER with Swan 240v. a.c. and 12v. d.c. transistorised power supplies.**
- ★ **GALAXY 300 80/40/20 METRE TRANSCEIVERS.**

We are negotiating for **Hy-Gain Beams, Verticals** and **Mobile Antennae**; shall soon stock **Jackson Vernier Drives**, and get anything for you from overseas that you may want at maximum discounts.

Write for prices and literature on the new equipment, and quotes on our re-conditioned units.

VHF

52 – 144 – 420 – 576 – 1296 Mc.

Sub-Editor: LEN POYNTER, VK3ZGP,
14 Esther Court, Fawkner, N.15, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB-EDITOR

Apologies for the brevity of the v.h.f. notes for this issue. Just at the critical moment we became involved in the State disaster organisation, brought into action by the Gippsland bush fires. A considerable number of Amateurs were involved, both on the h.f. and v.h.f. bands. 2 metre f.m. and 6 metre a.m. net frequencies were involved along with 3550 kc. in the 80 metre band. The operation began on 4th March and at the time of writing was still continuing. (Concluded on 12th March.—Ed.) Details will probably be covered at a later date. Thanks to all who took part for the excellent job done by all. 73, 3ZGP.

NEW SOUTH WALES

V.h.f. Group Has Own Call Sign: It was felt that the time had arrived for the Group to have its own call sign, to be used on its many activities, like the National Field Day, when there were not enough official call signs to go round. The call granted is 2BWI. The committee has decided that in future all Group activities will use the new call.

National Field Day is over. The Group was active with two stations. 2AWI, under the direction of 2ZOD and 2ZPJ, set up camp at Terry Hills; 2BWI was located at Kanangra Walls. Operation was on 40, 20, 6 and 2 mx. 80 mx would not operate well from this site. Over 200 contacts were made in the 24 hours. The stations were manned and operated by VKs 2HO, 2ZH, 2BSB, 2BSC, 2ZOO, 2ZVM, 2ZPI, 2ZTM. Thanks to all who helped in any way.

General: 6 mx JA signals have been heard in Sydney. On 2/2/65 in the late evening, Keith 2BK was working a JA on the h.f. bands when the JA mentioned that he was copying a 70 Mc. signal. They then tried 50 and Keith was able to copy. He could not reply as the tx was not available. There is every chance that JA could be worked in the next few weeks, so watch for them, but remember they are on 50, not 52 Mc.

Two Metre Openings to New Zealand: From Reg VK2ZMR. At 1655 E.S.T. on 8/1/65 the band opened to ZL and remained in until 1915 hrs. During that time signals were from S4 to S9 plus. It appears that six Sydney stations worked, and were 2ZBJ, 2ZKP, 2ZPT, 2ZDW, 2ZMR, 2ZDP. Five other stations were heard by ZL but not worked. The ZLs were ZL1AVZ, ZL1AZR, ZL1ACO, ZL2AQL, and ZL2AAH. It appears that the contact between VK2ZMR and ZL2AAH will beat the present record. On 9/1/65 at 0930 E.S.T., ZL2AQL was heard by VK2ZMR, VK2ZCK and VK3ZMQ/VK2, but no contact was made.

The above are extracts from the VK2 V.h.f. Newsletter.

VICTORIA

In recent months the Amateur has been asked to assist in various projects associated with the propagation of radio signals. To assist in these projects and help stimulate the interest of Amateurs, the V.h.f. Group has formed a small group to collect this information and pass it on to the interested parties.

Firstly there is Project Task Bridger—this project is being carried out to help clarify the characteristics and nature of anomalous trans-equatorial propagation via the ionosphere—and is being undertaken during the International Quiet Solar Year—I.Q.S.Y. by the Weapons Research Establishments and its collaborators.

Part of this project is the reception in the Southern Hemisphere of fixed stations located in Korea and Japan between 40 and 50 Mc. One of interest to Amateurs is the beacon station JA1IGY in Japan.

JA1IGY is operating continuously from Tokyo on the following frequencies, running 50 watts: 29.0 Mc. (A2 emission), 50.5 Mc. (A1), and 145.35 Mc. (F2). The antennae are horizontally polarised and rotate once each minute.

It would be of great value to the research team if Amateurs would monitor the 29.0 and 50.5 Mc. frequencies on the following basis:

(1) Observe on world days from 2100-0100 E.A.S.T. World days occur on three consecutive days each month when efforts by all teams are concentrated into their various spheres. These world days are as follows: March 16, 17, 18; April 20, 21, 22; May 18, 19, 20; June 15, 16, 17; July 20, 21, 22; August 17, 18, 19; Sept. 14, 15, 16; Oct. 19, 20, 21; Nov. 16, 17, 18; Dec. 14, 15, 16. (These are Tues., Wed. and Thurs.)

(2) Observe on world days from 0100-0400 E.A.S.T.

(3) Observe on Sundays from 1100-1300 hrs. E.A.S.T.

(4) Observe on Sundays from 1300-1700 hrs. E.A.S.T.

(5) Observe Saturdays 2100-0100 E.A.S.T.

(6) Observe irregularly but keep a log of times.

(7) Use a pen recorder during observing periods.

The type of information required in reports would be: (a) Times when an attempt was made to hear the signals; (b) Times when signal was heard and signal strength report; (c) The frequency being monitored.

It is also emphasised that reports of signals not heard when the frequency was monitored are just as useful as reports of signals heard.

Further to this project, Amateurs have been asked for details of tropospheric openings on 144 Mc. and above. No date has been fixed for the beginning, so look back through your logs and extract details of the openings you have taken part in over the past years up until now. Details should include band, date, time and areas worked plus any observations you may have made on the extent of the openings—particularly the possible duration of such openings. Reports from all areas are welcome—city, country and interstate.

These projects can contribute much to the Amateur cause. We are always protesting about the loss of our frequencies, but seldom is much concerted action taken to assist in providing information likely to assist our cause. Here is an excellent opportunity to render a service to the scientific side of radio and advance the case that the Amateur does contribute to the furthering of the art of communication rather than waste the frequencies allocated to him.

The following would be very pleased to hear from you: Bill Rice, VK3ABP (phone 65-8549); Ken Jewell, VK3ZNJ (93-6487), Len Poynter, VK3ZGP (35-8577). Any information you can supply will be greatly appreciated by all concerned. If you can be of any assistance a call to one of the concerned will solicit in detail the information required. 73, 3ZGP.

SOUTH AUSTRALIA

Activity within VK5 has steadily regained its composure after the annual cessation at the completion of the Ross Hull Contest.

During February, the annual general meeting of the VK5 Group was held with approx. 30 members and two visitors present. The officers elected for the ensuing year (1965-66) are: President, Brian 5TN; Vice-President, Rick 5ZFQ; Sec./Treas., Robert 5ZDX; Councillors, Eric 5ZEJ and Colin 5ZHJ.

The activities of the Group were widely discussed and to the fore the main field of research and experimentation is to be centred on: (1) The application of s.s.b. on the v.h.f. bands; (2) the continued development of transistorised portables—of which five units are already in use by various members on 6 mx.

Six metre activity is centred on rag-chewing and the other leg for 6-2 duplexing. In recent months no DX has been reported, which is the opposite to previous years.

Two metre activity is of a high order, mainly due to quite consistent tropospheric openings into VK3 and the South East of VK5, with the VK5 night watchman Mick 5ZDR having the most success, with the interstate operators.

Activity on 432 Mc. has gone stagnant, which was to be expected after the initial surge of activity expected from a new frequency allocation. The exception, however, is the t.v. transmissions from Maitland 5AO, on the top end of the band, complete with f.m. sound channel.

The pre-mentioned imminent 576 Mc. record has unofficially been broken and awaits confirmation for Rick 5ZFQ, Trevor 5ZTM with John 5ZJH and Trevor 5ZIS. The contact was made on 31st January over a distance of approx. 120 miles with signals R5 and S9 both ways. M.o.p.a.r. tx's running approx. 20w. to 16 element collinear arrays were used in conjunction with 6CW4 super-regen. rx's. Congratulations chaps, it was worth the effort. 73, 5ZHJ.

WESTERN AUSTRALIA

The fox hunt on 20/2/65 was more difficult than some I've been on. The signal disappeared over the causeway so I proceeded to open the clue and found it was in the hills. So off to Lesmurdie, about 15 miles away where I got a bonza view of the City of Lights and a weak signal which was tracked down to Whistle Pipe Gully. Here the sniffers failed to work, but the prickly bushes didn't! 6ZCF and 6ZAY found it by pointing their car in the direction of signal and turning on two headlamps and two spotlights, and kept walking until they fell over it. The beam was pointing east and was only two feet above the ground. These two were the only ones to succeed and this was at 10.45 p.m. The fox was immediately killed and everybody went to supper at 6ZEG's in Rivervale.

The V.h.f. Group meeting on 22/2/65 was well attended. 6ZAS was present and has replaced his RK34s with a 6/40. 6ZBZ is now 6HP and worked 22 countries in his first week on 14 Mc. s.s.b. He tried raising his power by using a 12BY7 driver; got some reports of horrible audio, so dug out a Marconi monitor and found a nice parasitic on 230 Mc. in the plate circuit of the neutralised 12BY7. I won't use one either, Harry, if I ever get a chance.

Tony 6ZDT and Doug 6ZDW were assisting Chas. 6LK in the National Field Day. Only 22 contacts were made on h.f. with the Geloso 25w. a.m. rig and 56 on v.h.f. Points score of 410 was down a bit on the usual 8,000. That s.s.b'ing of Jim 6RU kinda helps when its around.

A V.h.f. Field Day has been arranged for the week-end of 3rd-4th April. Same rules as last time, only early morning sessions are 1-2 and 5-6 a.m.

Some of the boys used their a.m. mobiles (what's a.m. mobile?) in another Vintage Car Club Rally on 28/2/65. The cars went to Rockingham and the run was over by lunch-time.

Roy 6ZBD is having fun with transistors. A 144 Mc. rig using AF118s refuses to percolate on 2 mx. A 150w. toroid transformer is going well with a pair of ADZ12s. It can't be heard at arm's length either. It took eight hours to wind though so I'll put up with the noise from my 30w. job for now. 73, 6ZAG.

NORTHERN TERRITORY

As our district is so vast with difficulty of finding out what the gang are doing in Darwin (who else has to work 1,000 miles to get a QSO with his own district to get W.A.S.?), the news is a little limited.

The contest was fine from here in the "Centre" but very poor from the top end. It was certainly not due to lack of activity that the Darwin gang was not heard more often, but simply due to conditions. Before the contest began both 8KK (Alice) and 8ZDI (Darwin) held rigid lunch time skeds and it was not until 11/12/64 that a QSO was made, but from then on contacts became common. During the contest the 14th Dec. there was DX openings each day from Alice but only about five for the whole duration extending to Darwin and even these were very poor.

All States were worked including ZL, but not VK9s. The most consistent States were VK6 and northern VK2, with Darryl 2ZLP being worked daily. The hardest appeared to be Sydney and Hobart areas. Multi-district openings were very rare, unlike previous years when 2, 3, 5 were heard at the same time. It seemed to be very much more short skip than long skip.

JAs were heard several times, but unable to be raised above 52 Mc. I'm afraid too many ZLs missed a QSO with VK8 due to business being fierce at that time with VK.

T.v. openings on Channel 5 and 5A were viewed here several times and on 8/1/65 were seen for four hours.

Next year it is proposed to concentrate on 2 mx from Alice for DX purposes, which should be very interesting.

In closing, may I say that it was interesting to note that t.v.i. on Channel 0 was caused on many occasions, but it was an unavoidable "evil"?

Stations on v.h.f. in VK8: Alice Springs—8KK; Darwin—8ZMD, 8ZDI and 8ZCX. 73, 8KK.

FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

RECIPROCAL OPERATING

The U.S.A. has now amended its Communications Act to open the way to bilateral reciprocal operating privileges and Costa Rica became the first nation to sign. W8NRB, a Russian-speaking member of the U.S. Information Agency, was permitted to operate his station in that country. The U.K. similarly granted operating authorisation for visiting Amateurs to the recent R.S.G.B. Exhibition. Belgium has permitted visiting Amateurs to obtain mobile licences. These moves all indicate a welcome trend in inter-nation Amateur operation.

COMMEMORATIVE STAMP

The special commemorative stamp honoring the 50th Anniversary of Amateur Radio in the U.S.A. has been sighted at Executive. No doubt many Amateur Radio philatelists will also have copies. First-day covers have been sent to each I.A.R.U. Society by the A.R.R.L.

I.A.R.C. STATION 4U1ITU

The International Amateur Radio Club in Geneva will have 4U1ITU on the air continuously during May 16-17 to commemorate the centenary of the International Telecommunications Union. A special QSL card is being printed for the occasion which should be of interest to all DX-ers.

CYPRUS CLOSE-DOWN

The Cyprus Council of Ministers under Archbishop Makarios met on Sept. 3, 1964, and cancelled all Amateur licences including the I.Q.S.Y. station, 5B4WR. No reasons have been given, but it should be noted that sovereign base stations signing ZC4 calls are still active.

I.T.U. MONITOR REPORTS

For the period March to August, 1964, the I.F.R.B. monitoring section has reported the following unauthorised broadcast stations:—

7035 kc.—Peking and Moscow.
7050 kc.—Cairo and Peking.
7060 kc.—Peking.
7075 kc.—Egypt.
7080 kc.—Peking.
7090 kc.—Peking and Tirane.

HAND-SENT F.S.K.

The P.M.G's Department, on a request from Federal Executive, has now varied the regulations covering the use of r.t.t.y. The present permission covers only the use of machine-sent f.s.k. and this has now been extended to cover the use of hand-sent f.s.k. The same technical requirements will still apply, but simpler equipment may now be used in obtaining similar propagation advantages.

RETIREMENT OF FEDERAL SECRETARY

Mr. Jim (Jay) Lancaster, VK3JL, the Federal Secretary of the W.I.A., retires this month after over four years in the position. His retirement has been precipitated by a period of ill-health which has undoubtedly been aggravated by this onerous job. His precise business-like memos, toned by his quiet efficient personality, will be missed by Executive and Federal Councillors alike. Good health, good luck and thanks Jay, for a job well done. Mr. Peter Williams, VK3IZ, takes over this important and exacting task.

PHONE/C.W. BAND SEGMENTS

Below is shown the voluntary sub-division of the various h.f. bands. These sub-divisions have been agreed by all Divisions, and all Amateurs are asked to co-operate by adopting them. It should be noted that the 21 Mc. exclusive c.w. segment is one that the W.I.A., as an I.A.R.U. Society, has agreed to adopt internationally.

C.w. Only	C.w. and Phone
3,500- 3,535 Kc.	3,535- 3,700 Kc.
7,000- 7,030 ,,	7,030- 7,150 ,,
14,000-14,100 ,,	14,100-14,350 ,,
21,000-21,150 ,,	21,150-21,450 ,,
28,000-28,200 ,,	28,200-29,700 ,,

FEDERAL QSL BUREAU

Cards handled through the Bureau for the W.I.A. year ending Feb. 1965 totalled 53,249. This is the highest handling since 1949!

Mis-sorts by overseas Bureaux are increasing alarmingly. Recently the VU Bureau included with the VK despatch all cards having a prefix commencing with the letter V—a total of 50 mis-sorts!

The annual DX contest of the U.S.S.R. is scheduled for May 8 and 9, 1965. Full details from this Bureau.

The annual Polish DX contest is set down for 1500z, April 10, to 2200z, April 11, 1965. Details on application to this Bureau.

The 1965 P.A.C.C. Contest (Netherlands) is scheduled from 1500z, April 24, to 1800z, April 25. Details from this Bureau.

The C.H.C. 1965 QSO Party is to be staged from 2300z, June 4, to 0600z, June 7, 1965. Full info. from the Federal Bureau.

The station signing TM5AA, currently active on 14 Mc. c.w. (Mar. 1965) should be viewed with suspicion. Claims name is Tom and QTH Indonesian Borneo. Several features throw doubts on his bonafides.

The DX-pedition to the Saudi-Arabia/Iraq Neutral Zone in January 1965 passed off successfull. Operator was Vic Crawford, HZ3TYQ/W1TYQ. In the four days 1,340 QSOs were made with 71 countries. Operation was conducted from an unheated, unsheltered tent in high winds and rain with temps. in the 20-30F. region! The area is one of the remotest in the world, inhabited by only a few Bedouins and accessible only by 150 miles of camel trails! QSLs for contacts with HZ3TYQ/8Z4 should be routed via Ned W1RAN, 207 Thames St., New London, Conn., U.S.A.

—Ray Jones, VK3RJ, Manager.

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NEW SOUTH WALES

HUNTER BRANCH

Seen any Flying Saucers lately? Perhaps if you look up on the way to the next Branch meeting you'll be lucky. Some strange sky lights were visible just prior to the March meeting and this was, no doubt, the forerunner of several other unexplained happenings of that night. To begin with, Sherwood 2AJF was in attendance, secondly there were no hecklers during the election of officers—a very undemocratic procedure—the lack of hecklers that is. And thirdly, no cries of "shame" or "swindle" or such like terms of endearment were heard when I was elected to the illustrious and highly paid office of zone correspondent. Now, I ask you, could there have been a more unusual evening? But there's some more even yet.

Associate members Henry Schroeder and Mike Latham so delighted the generous P.M.G. examiners at the January quarter sessions that their terms of imprisonment by the receiver have ended and they will soon be heard on the air, a small trifle of some Morse speed being all that prevents them at this present. At the time of writing, results are not known of the other candidates, Belmont Bob and his mates Fred and Bones, but they are hoping, and so am I.

To get back to this election lark. It is, with minor changes, a case of the same that went before. Frank 2APO is President once more—a worthy choice you will agree since the second year of Presidency is always more interesting than the first, and the remainder of the executive—democratically elected, mark you—is: Vice-Presidents, Les 2RJ and Keith 2AKX; Hon. Treas., Bill 2XT; Hon. Sec.: Gordon 2ZSG; Social Sec./Treas.: Bill 2ZWM; V.h.f. Liaison: Tony 2ZCT; QSL Officer: Stan 2AYL.

Welcome to the newcomers, Les, Bill and Tony, and welcome also to Frank 2APO in his new capacity of assistant zone correspondent. Now, you see, it is impossible to blame me for everything you read in the notes.

The election was conducted most ably by Vic. 2VL, Divisional President, and honoured guest for the occasion, aided, so the Federal Councillor would have it, by several, and I use the term advisedly, "hatchet men". And since he made the remark, Pierce 2APQ was there also in his official capacity. Following the presentation of his report, which this year was available as a copy to each member, Frank handed over to Vic. who gave a short dissertation on the doings of the Institute, statewise. After much discussion, a worthy procedure to be sure, Vic. handed over to Pierce who was able to put members in the picture from the Federal point of view. So numerous were the questions that it was after 10.30 when the monthly meeting closed, following the usual votes of thanks all round. Those who attended will agree that the evening was profitably spent and that the remarks made by all speakers contributed to our enjoyment of the hobby. It may be said that it behoves the Amateur to interest himself in the politics of our association, since only by concerted action supported by the votes of members will the executives at club, divisional and federal level be able to obtain the rights and privileges to which we, as Amateurs, are entitled.

This leaves not much space for the doings of the month around the Branch, but something which did interest several of our young members was the John Moyle Memorial National Field Day. Allen Legge, John Bedford, Bruce Morley and Jan 2BJO journeyed to Mt. Heaton for this event and using the call 2ATZ/P logged 72 contacts on h.f. and v.h.f. Westlakes Radio Club, which the boys represented, was proud of this score, especially considering the 15w. available. It is a deplorable thing that some field stations should have blatantly used power well in excess of that permitted in an all-out attempt to win. After all, this field day is a competition. Some "amateurs" would have it made a race. Two other members of Westlakes Club, Susan 2BSB and David 2BSC, helped out with operation at another field station in the Blue Mountains.

The Saturday column for Amateurs in the Newcastle Herald is doing a remarkable amount for good publicity. However, it needs your support to keep up the flow of news. Please contact Jennifer Cox if you have anything which could be of interest for this venture.

John 2ZJG has been in hospital recently and although he has had a transceiver at his bedside I am sure he would rather be at home. The chaps wish you a speedy recovery John. Bill 2ZL is one who has made a speedy recovery and this since Mrs. 2ZL has returned home from hospital. Reason—Bill now does not have to cook for himself!

Did you get fooled this April 1? I expect the usual trickery prevailed and that the most careful fell for something. However, I can assure you of one April event that will really be worthwhile. That is the meeting of the Branch the day after All Fools Day. We commence business at 8 p.m. on the 2nd in Room 6, Clegg Building at the Technical College, Tighes Hill. All the details of what is on will be in the broadcasts. Till then, when I'll see you, 73 2AKX.

CANBERRA RADIO SOCIETY

The Canberra Radio Society will have an interesting programme for its second Easter Convention. There will be all the tourist resources of Canberra for the family, interesting scientific visits, and more than the usual number of Amateur contests.

A summary of the programme is as follows:

Friday:—
Day—Mobile Contest, greatest number of contacts in any four hours.
Night—Satellite Films and conversational QRM.

Saturday:—
9 a.m.—Special Visit to the instruments at Tidbinbilla Space Tracking Station (now tracking the craft to Mars).
11 a.m. to 1.30 p.m.—Picnic Lunch at Cotter Reserve.

SILENT KEY

It is with deep regret that we record the passing of:—

VK3SB—A. L. (Bert) Brehaut.

12.30 p.m.—Receiving Contest (a.m. voice code transmissions on 7 Mc.; tx power gradually reduced to near zero).
2 p.m.—H.f. Tx Hunt.
4 p.m.—V.h.f. Tx Hunt.
8 p.m.—Dinner (if booked).

Sunday:—
10 a.m.—Special Visit to Australian National University Nuclear Physics Dept. (the problems of 7½ million volts).
2 to 3 p.m.—All-Band Scramble.
3 p.m.—Mt. Stromlo Observatory.
4 p.m.—H.f. Tx Hunt.
5 p.m.—V.h.f. Tx Hunt.
8 p.m.—Films, Prize-Giving, and White Elephant Sale (bring something!).

Monday:—
10 a.m.—Special Visit to Belconnen Navy Tx (problems of several hundred thousand watts, acres of antennae including a log-aperiodic, frequency synthesisers, two tone morse, etc.). This will take two hours, ending in the Officers' Mess.

Registration: 10/- (XYLs free).

Accommodation: Cheaper type still available in private houses or hostels—possible cancellations in higher class. Plenty of camping, and shelter for those with an air mattress.

Any enquiries should be addressed to Ken Mattei, VK1KM, 86 Wilshire St., Dickson, A.C.T.

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VICTORIA

WESTERN ZONE

It appears to be my turn after all this time and find I have very little to contribute, owing to not being home to listen or having a mobile completed.

The country area seems to be well organised with David 3ADS and his team of fire network operators. He certainly is putting the most into it.

George 3GN has at last chased the spiders and moths from his gear and is now in the throws of building a mod. and erecting the aerial, so it won't be long?

It has been some time since the Jamboree-on-the-Air, but I feel a lot of thanks should go to those Amateurs who assisted the boys. In Victoria 160 groups participated by the courtesy of 120 Amateur radio stations, making 1,850 group to group contacts within Australia and 108 contacts overseas, and more than 3,000 Scouts actually took part in Victoria. The 8th Jamboree-on-the-Air is set for 16th and 17th October, so please try and avoid this date for the conference. 73, 3AQD.

MOORABBIN & DISTRICT RADIO CLUB

Moorabbin and District Radio Club members were actively engaged in the W.I.C.E.N. participation in the recent tragic bush fires in East Gippsland. Members active were VK3s AFQ, ACS, XK, ZPC, ZRD, ZNS, ZGQ, XV, AHZ, AFJ, EM, ARD, AKB, APD, ZNJ, ZRT, ZOP, ZOO and RN. These notes are being compiled at Disaster Headquarters and as so many members are engaged, it is very possible that some call signs and members have been overlooked; if so we apologise.

Club members were responsible for the setting up of various base stations located at Bairnsdale, Bruthen with mobile operators covering areas from Heyfield to Orbost and Omeo areas. Early and constant participation in W.I.C.E.N. and Field Day experiences enabled members to readily adapt themselves to the conditions and as a result assisted to set up lines of communication which were called upon repeatedly by the Fire Control Authorities. Work ranged from ambulance escorting, fire spotting, water tank escort, patrols, evacuation.

Kevin 3ARD and Peter 3XK were present at the dramatic fires which surrounded Bruthen and Sarsfield. The windscreen of 3ARD's car was shattered, thought to be due to the tremendous heat whilst in close proximity to fires. Hospitality was extended during the rare lulls by country W.I.A. members and in particular Merv. 3LL and his XYL Val. We extend our gratitude and are hopeful that a return visit can be organised for the future when conditions are less trying. Members operated on 80 metres (a.m.), 6 and 2 metres f.m. (channel A and B).

And now more pleasant going ons. Members visited the Brighton Bowl for a social evening in February, showing their skills in alley bowling. These evenings have been held quite frequently and provide another venue to enable XYLs to get together—sounds like Moomba—let's get together and have fun—yes, sir!

With the Ross Hull Contest over and done with for 1964/65, some members of the Club operated portables from Mt. Bunninyong for approximately ten days. 3ZNJ, 3ZPL, 3ZOP and 3ZNC (from Geelong Amateur Radio Club) were the gentlemen concerned and active on 6 and 2 mx a.m. and f.m. 800 contacts were made and all States were worked except VK7 and VK9. Exceptional contacts were: 3ZNJ to 5ZMJ Port Pirie, a distance of 470 miles; 3ZPL to 5ZDR Adelaide, 380 miles; 3ZOP to 5ZRO, Adelaide.

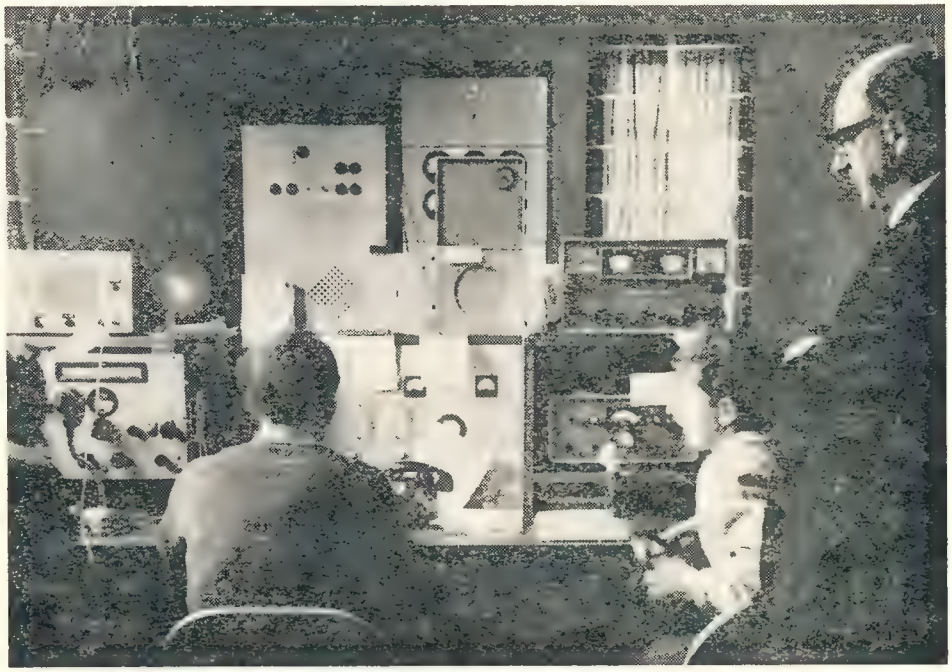
And now down to business. Hal 3ZOO has been busy working DX on 2 mx f.m. with very good success; it's that mighty tower and beam set-up. Peter 3ZPC has re-erected his antennae and running a new rig, details on the secret list. Graham 3ZMQ has QSYed to VK2. Kevin 3ARD has been heard on s.s.b. on 2 mx. Bob 3ZRD is busy constructing 432 Mc. gear and is heard on 2 mx occasionally. Peter 3XK is busy re-constructing gear. Harold 3AFQ has re-appeared after an absence of many months and is back on 2 mx. Graham 3ZIX still appears on 6 mx now and again, but is believed to be more interested in a new car. Ken 3ZNJ is constantly ear-bashing 3ZNC and anyone else who looks in. He believes in using the space. Ted 3XS is busy constructing s.s.b. gear. David 3ZOP is building a transistorised 2 mx transceiver. Val 3OT still holding his own amid the fierce opposition on the f.m. net. Lindsay 3ZNS is working on 432 Mc. gear plus other projects. Members heard on s.s.b. have been 3ARD, 3ZE, 3BM and it is believed others are busy constructing. It may be not far in the distant future when the Club 80 mx net will be resumed with s.s.b.

During the National Field Day, members were active under 3RN/P (3ZOP, 3XV, 3APD, 3AFQ, 3XK), 3ZAK/P (3ZNJ, 3ZAK, 3ZNC, Bunninyong), 3LC/P (3JI, 3CB, Crib Point), and 3ACS at Blue Mountain.

A tx hunt was recently held and as usual fully patronised, in fact more onlookers than hunters. Social evenings will be resumed and the first was held in March at the QTH of 3XK. A fund-raising activity of paper collecting is current for the purchase of a projector. All members please note.

Keith 3AKB is frequently active from his new QTH—all bands. Ted 3TG moved to the country recently. Tom 3ZIQ is now active on f.m. net and re-building 2 mx a.m. gear. Clive 3LZ gave members a talk and showed slides of his recent overseas trip. Jack 3VT is running 15w. on 2 mx; nice to hear you around again Jack. Arthur 3AWO was welcomed back after his trip overseas. Max Patman sporting new mast and skeleton slot for 2 mx.

And finally, a nudge from the Treasurer. Any members with a guilty conscience who have not come forth with their annual sub., can either mail their greeny to the Club Secretary or pay at a Club meeting night. Any member who becomes unfinancial will be struck off the list and not mailed our monthly newsletter, as it costs money these days. 73, 3XK.



One of the Amateur Receiving Centres during the disastrous Victorian bushfires in March was VK3WI, pictured here as staffed during the actual emergency, complete in all its untidy state. The Federal President Mr. G. M. Hull is seen viewing the operation.

OBITUARY

ALBERT LESLIE BREHAUT, VK3SB

It is with regret that we announce the death of Bert Brehaut, VK3SB.

Bert was involved in a motor accident in the latter part of November, and although badly bruised he continued working at his customs agent business, under extreme difficulty. However the effort was too much and Bert passed away suddenly on 16th December. Bert's wife predeceased him a few months earlier, after a long illness.

VK3SB was one of the "old brigade" and usually worked the 20 metre band. This three element rotary beam at Oakleigh was somewhat of a land mark in the district. He was also one of the pioneer 200 metre gang when Sunday transmissions of musical items were permitted, and his programmes were very popular with the locals.

Bert leaves three married daughters and our sympathy goes out to them.

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QUEENSLAND

February was certainly a very quiet month, newswise in the Sunshine State. At this time of the year, Divisional Council elections are being held and it is pleasing to note that there were sufficient members interested enough in Council that an election had to be held. The names of the successful candidates will be known by early April.

Here is a final reminder about the Annual Divisional Convention. It will be held at Alexandra Park, Alexandra Headlands, on the week-end of 2nd, 3rd and 4th April. The organiser again this year is Bob 4ZRC. Both interstate and intrastate visitors will be most welcome. Arrangements are generally the same as last year. Registration is 2/6 per family, cost per head, three meals and teas, £1. School children half price, those too young for school—free. High frequency contests are being arranged by Al 4LT and v.h.f. contests by David 4ZDF. Finally, keep in mind the

auction of unwanted gear for the convention fund and the home constructors' contest.

The main news this month comes from the Ipswich and District Radio Club. Without a doubt this club would be the most progressive in VK4 at this moment. The Club's basket picnics are being attended so well that they are being held about every month now. Perhaps the usual seaweed fight is an attraction? All the picnics so far have been held on the Brisbane River. The next will be held at Redcliffe on Moreton Bay, but I doubt if there will be any seaweed there. Mobiles will be the order of the day—probably all will be on 53.032 Mc.

A point that springs to mind from this is a very likely explanation of why the club is so very strong. There is complete harmony between and intergration of efforts of h.f. Hams, v.h.f. Hams and S.w.l's in the club. There are none of these petty jealousies which do exist on the Ham bands today. (This is not necessarily the official view of this Division, but is included as a personal thought on writing these notes!)

An important item of news from the club is that the club is now offering a handsome 8 x 10 inch certificate printed in colour to all those who make contact with any TWO club members as well as the official club station VK4IO. Club members include 4GT, 4LI, 4RG, 4HW, 4ZBN and 3ZMB (soon to obtain a VK4 call). Club members may be worked on any band. Applications for the certificate should be forwarded together with details of the contacts made to Public Relations Officer, P.O. Box 61, Ipswich, Qld.

I can assure you that the certificate, which is suitable for framing, is both unusual and well worth trying for.

Finally, once again, don't forget the Easter Convention! 73, Bill 4ZBD.

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SOUTH AUSTRALIA

The monthly general meeting and the annual general meeting of the VK5 Division were held on the same night in the club rooms to a very representative gathering of members and visitors, especially when one considers that such meetings are generally avoided like the plague. In VK5, however, the general membership line up in great gusto and seize every opportunity to give the Council members a run for their money, all taken in good part by both sides, and it has often been remarked that it is a pity that there could not be more annual general meetings in the year, because of their popularity.

The chairman (Phil 5NN) opened the monthly general meeting, which incidentally is treated by most of those present as a sort of a pipe-opener, or should I say as something of a preliminary bout. Most of the interjections and questions usually come from the younger section, with the veterans quietly flexing their muscles, vocal that is, in keen anticipation of what is to come later on in the night. With very little of interest happening, the general meeting is quickly brought to an end, and a flutter of interest and excitement is apparent in the body of the hall as Phil 5NN slightly battered, but still full of fighting, opens the annual general meeting.

Strangely enough, this year's meeting opened very quietly, and it looked as if the members were going to be deprived of even the slightest of excitement. The scrutineers for the Council ballot were Ses 5GP, John 5KO and Ray 5RK, and became the first unanimous vote for the evening, not that anybody was surprised, and left the room with the ballot papers, to the tune of hoots, jeers, catcalls, and rude suggestions as to the condition of their eyes and mentality, all of which cheered them up no end, and put them in the right mood for their arduous task.

Next came the back-scratching section, in which everybody patted everybody else on the back—the chairman's report, the treasurer's report—and then the lights were lowered for the main bout—amendments, etc., to the constitution. The first amendment fizzled out quickly due to it already being covered in the constitution, the second amendment concerning the matter of the trustees produced quite a flurry, with several having their two-pennorth of say back and for, without any visible signs of rising blood-pressure, and this round finished, I would say, with Council and chairman being well ahead on points.

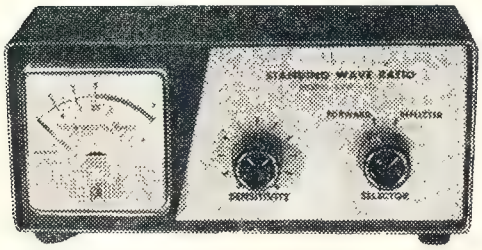
Round three opened with the amendment concerning the fees and the decimal coinage and seemed likely to add a few more points to the score of Council, when out of the blue, Brian 5CA pointed out that no provision had been made in the amendment for the fees for country members, and at this point in the proceedings the tempo of the night quickened considerably. Everybody tried to get into the act, questions were asked, answers were given, matters of no importance were dragged into the discussion, in fact at one time Brian 5CA was addressing the assembled gathering on the merits and de-merits of fitting wire screens on to windows because of living in the country. Anyway, after quite a spirited discussion on the whole matter, the amendment was shelved for further discussion, possibly at the next monthly meeting or so, and the gong rang for the end of the round, with the official verdict being given as a draw, and the meeting closed ten minutes overtime, and then only because Phil 5NN drew a trump card from up his sleeve to the effect that the caretaker would soon be up with his alsatian.

A fair idea of the success of the night was the fact that not one member left the room to go home until the meeting was closed, and if this is not a good indication, well what is? Incidentally, during all this excitement and general hilarity, unwelcomed and unsung, the three scrutineers had returned to the meeting with the results of the ballot, but were given scant attention and before long were as vocal and noisy as anybody present. All in all, a jolly good night's entertainment, which is as it should be, if the interest and excitement dies, then so does the Division, and if this meeting can be taken as a guide, then the VK5 Division is well alive and kicking.

NEW IMPORTED!

STANDING WAVE RATIO and REFLECTED POWER METER

Already supplied to P.M.G. DCA, W.R.E., AWA and other commercial establishments and countless amateur operators.



This instrument is not just a kit — it is fully wired and ready for use.

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Now just in case the casual reader should get the impression that VK5 Divisional meetings are something in the nature of an Australian Rules final with a couple of Donnybrooks thrown in for good measure, may I say that several items of good news were read out by the chairman during the lull in the proceedings, such as the fact that the membership of the Division had risen by 6% during the year—that VK2 had been contacted re some Morse Code tapes, six in number, the same to be used by the VK5 Division—that agenda items for Federal should be checked with Geoff 5ZCQ, that t.v. type, just in case the said item was already included in the big black book—and last but by no means least, the fact that Phil 5NN and John 5JC had attended a recent meeting held to investigate the establishment of a Science Centre in Adelaide which would be affiliated with the Clunies Ross Foundation in Melbourne and other States.

Phil 5NN was roped in on a Science House committee formed to investigate the possibilities of establishing such a centre on behalf of about 20 scientific bodies, mostly of Amateur status, all of whom have been circularised as to their basic requirements. There is at the moment of writing nothing concrete, it is completely in the preliminary stages, but at last it would appear that we could, with a bit of luck, acquire our own rooms for all Divisional activities, in perhaps the not too distant future, and our building fund assets will come in handy to help us along the way. At the moment just a pipe dream perhaps, but knowing Phil and his cautious approach to all matters Divisional, a pipe dream with a chance of coming true.

Noticed Pete 5FM sitting with Ses 5GP at the meeting and could not help but notice that Ses appeared very restless all night. Now normally he is as calm and collected as it is possible to be, and upon making a few judicious enquiries I was told that he missed his pipe, having left it at the QTH of Dave 5DS on a recent visit, and Dave having forgotten to bring it along to the meeting. Further enquiries revealed the horrifying fact that Dave, true to his ancestors' teachings on the matter of mickles making muckles, or something, had been hiring out the said pipe to visitors at a special rate of course and the chance of Ses ever getting such a splendid source of income back was almost nil.

Brian 5BI, who is now domiciled at Cowell, decided to build a garage-cum-shack at the new QTH and solicited the assistance of his long suffering close relative, Vern 5VB, probably better known as "The Admiral". Everything comes to he who waits, so tis said, and Vern, remembering how Brian used to answer his many enquiries on building up radio gear or studying radio circuits, at last managed to get his own back every time Brian made an enquiry as to where he should put this or that, by loudly telling him to check the blueprint—study the drawing—etc., etc.—much to the annoyance of Brian, and much to the enjoyment of Vern, who was extremely sorry when the project was finished.

Len 5ZF is beginning to think that there is something in all those corny jokes about Scotchmen and the aforementioned mickles and muckles, especially when he received a QSL card from Dave 5DS minus even a suspicion of a stamp. Dave, when questioned on the matter by our correspondent, made a noise resembling a front tyre of a car rapidly going down, and stalked off into the night, but this did not help Len much, all he has at the moment is a very expensive QSL card and nothing else, not even a mickle, or should it be a muckle?

I don't usually give two paragraphs to one man, but I am given to understand that Brian 5BI has a kitten which he calls Fred. Owing to a mix-up in his Ohms Law and his Bi-Lateral Modular Theory, he now calls him Freda, and to make it more confusing Freda goes swimming with Brian as willing as willing can be. My espionage agent for that district is making enquiries as to whether Freda eats dog biscuits, or perhaps buries her bones in the garden!!

At considerable expense, and a good chance of being shot at sight, I reproduce the latest news from the Elizabeth area, although no responsibility will be taken for truth or accuracy!!

Ted 5ZE is in the throes of erecting a three element beam for 20 mx and rumour has it that the ground plane misfired, miscalculated, or it could even have been misquoted.

Clive 5PE is now sporting an exotic Yank Tank, the old Morris having become just a memory.

Cyril 5DY is quietly working away on the construction of an oscilloscope, after having returned from a motoring holiday which took him many thousand miles around the countryside.

Bill 5VE has moved his QTH to Salisbury and it should not be long now before a big signal is heard from that direction.

Ron 5FY has been in hiding for so long that I decided to put my ace espionage agent on the case. He cracked it quite easily, with the help of that interesting little journal "Info". Ron is engaged in laying concrete here, there, and everywhere around the house, and therefore air time has gone by the board. Get it?—gone by the board—you don't get it?—well you have never laid concrete! Okay, okay, I thought it was good—my apologies.

Dick 5DT has been busy chasing the bugs out of his sideband gear and is now busy chasing the DX on 20 mx and catching some of it too.

Hugo 5IB, after waiting almost 12 months for permission from the Council to erect his tower, no doubt feels that he will have to wait a further 12 months before he regains the incentive to do anything about it!

I notice in the journal v.h.f. notes—Oh yes, I read them, just in case I can pick up a libel action or two—anyway, I read that Garry 5ZK is likely to resume residence in VK5 again, probably in March. That's what I read anyway.

Bert 5BB is doing a swell job for the magazine as the DX scribe, and may his shadow never grow less. I have to lay it on with a trowel in this case, because he has probably woken up by now that quite a lot of his paragraphs mysteriously appear in the W.I.A. column in the local paper, "The Advertiser". I have no conscience where Amateur Radio is concerned Bert. Am I forgiven?

Met Nobby 5WK whilst Xmas shopping in the establishment where he reigns supreme. After exchanging several uncomplimentary remarks, he then did his best to brainwash me on the merits of s.s.b., and by the time he had finished I did not know whether to band my licence back there and then, or just continue in my ignorance and my lace-up boots and my hand-lantern. Why, he even suggested that I was going backwards instead of forward!

Ted 5JE not in the best of health at the moment of writing. He has been in Daws Road Hospital for some time now, and has been finding the going hard. I understand that when the portable library came around he was quite surprised to note that they had a copy of the A.R.R.L. Handbook on display, but was disgusted to be told that he was the first patient ever to ask for it!

There is an old saying "that the husband is always the last one to find out the truth," and I began to believe it the other evening when I heard my XYL on the telephone saying, with her voice dripping with romance, "Oh yes, Mr. Sullivan (5JK), I have always admired your teeth, etc., etc." However, there was nothing for me to worry about, it appears that she had become a little tired of the set of dentures that I had made her many years ago out of a couple of egg insulators and two i.f. trannys, 1900 kc., and wanted to know just who was Jim's dentist. I always thought they were a good set of teeth, although now and again when my XYL smiles rather broadly it is possible to read on the upper gums the word Aegis, or was it Kingsley, anyway it does not matter, one never expects gratitude in this world. "Oh yes, Mr. Sullivan, I have always admired your teeth"—all three of them! Wouldn't it??!!

Leith 5LG a little quiet at the meeting, I thought, although he did manage to get into the act when it was announced that he would be sending Morse Code practice on a frequency of 3540 kc. Apparently this frequency does not meet with the approval of most members active on this band, and Johnny 5KO was given carte-blanche, or was it mabel, to do a little lobbying to have it altered, even if it turns out that he originally allocated that frequency many moons ago.

There was only one new addition to Council arising from the ballot, and the word new is something of a misnomer in this case, because too many years ago for me to want to remember, this new member was already on the VK5 Council, and acting as Treasurer at that. I refer to Uncle Tom 5TL, complete with cabin on the river. I was glad to see him get in, possibly in view of the fact that we now have two somewhat old timers on the Council, to wit, he and Harry 5MY, our respected and revered Treasurer. It would appear that the era of the "Youth Image" is somewhat on the wane these days, as very little is heard of the old catch phrase, "Too old—too old—no go—obstructive and bound up with the old traditions, etc., etc." Whenever I hear about old age, get rid of them, etc., etc., I always remember the old story of the Chinese gent who decided to get rid of his aged father because he no longer could keep up his production figures in the daily toil. Trussing the old man up and thrusting him in the basket, he was on his way to the river when he met his own son on the road. "What are you doing with Grandfather," he said. "I am going to toss him in the river, he has outlived his usefulness, my son," said the father. "Well you know best my father," said the son, "but be sure to bring the basket back with you." "Why should I do that, my son?" said the father. "Well the day will come, my father, when I will need the basket for you!!" Nice to see you on the Council, Tom, even if it does put you and I on opposite sides of the fence. You beaut!

Well, at this point I suppose I am duty bound to make passing reference to this year's winner of the Higginbotham Award for 1965. I think, with a little pruning here and there, and taking my natural modesty and reserve into consideration, I could manage to write about three pages about the winner—knowing him so intimately as I do—but also knowing the Ye Ed. so intimately as I do, I will not pursue this foolish line of thought, and simply say that I agree with the decision of the majority in VK that the choice of the Magazine Committee was quite beyond understanding, not logical, just favouritism, or any other choice of adjective that might appeal. However, I have won the award, and just you try and take it away from me!! Now speaking, seriously, for once, although it ill becomes me, I honestly feel that winning the award is really not a personal honour but a Divisional one, in other words a pat on the back for VK5, because without the help throughout the year of my army of spies in VK5, I would not be able to write anything for the magazine. I would like to mention each and every one by name, but to do so would be to court disaster by drying up my source of information, and all I can say in my defence is that I have enjoyed immensely being the VK5 scribe. I have made a lot of friends over the years, most of whom I have never met, and depending upon what is written on the wind, I am more than happy to continue to mutilate the King's English on behalf of the VK5 Division, because I have always firmly believed that one only gets back from a hobby just as much as one puts into it and believe me I have had plenty from our grand old hobby of Amateur Radio. I thangyou—I thangyou.

Determined to close on a much more cheerful note, Jim 5FO rang me to ask if it was true that I had a box of i.f. trannies, and following a discussion along these lines, his XYL Rae came on the line for her usual three-penny-worth of libel attack, but I set her back on her heels very smartly by telling her that she would have to line up in the queue to congratulate me! Well, you should have heard her—so much so, that the telephone exchange rang back to say that I would be reconnected with my caller when they could get a fuse to hold long enough to complete the circuit. Anyway, all of this flattery did not deter me from attending with my XYL (you know the one, "I have always admired your teeth, etc., etc., ad nauseam") the wedding of Jim and Rae's eldest daughter Kay to Colin. Everything went off very well, and I tried to snatch a few words with the groom, but was shepherded out in no gentle manner by the mother-in-law Rae. Therefore should Colin by any strange chance be permitted to read these notes, and wonder just what I wanted to say to him, I only wanted to tell him that if he has any trouble with his mother-in-law, just give me a ring on the telephone—and we will flee to the hills together!!!! Oh, go on, Rae—you don't mean that—after all, you did kiss me in front of the church—don't deny it—I have still got my broken arm to prove it!! 73 de VK5PS—PanSy to you.

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WESTERN AUSTRALIA

Do you like to see these notes appearing in "A.R."? Then how about someone volunteering to write them as your present scribe will not be writing them very much longer. This job can well be carried out by a country member, so don't think that because you live away from the metropolitan area you can not volunteer.

Bill 6DX has been down from Kalgoorlie, holidaying at Safety Bay and has shown up at several QTHs. You had better slow down a little Bill or you may not be able to come and visit us in the city.

Rolo 6BO is going down to Albany for a few days in the near future and may take some gear with him.

Pat 6PH has been up from Narrogin and collected three two-way f.m. units, so this will make up a little net around this area and will result in 52.565 Mc. being used quite a deal.

The Youth Radio Co-ordinator would like any persons who are conducting groups to register them with the Institute Scheme so that he can know what is happening in this field.

Roy 6RY has been re-appointed as Federal Councillor for this Division and should you have any matters which you would like aired please let him know and the matter will be attended to.

6WI has once again moved QTH and is now being run by Bob 6BE from Kalamunda and should give a better coverage. Bob will, however, appreciate news items being passed along to him.

Well this seems to be all for this month, so please think about the first paragraph. 73, 6RY.

— . . . —

TASMANIA

By the time this is being read our Annual General Meeting and Dinner will be over, and our new Council will have been elected to carry on the business of the Division for the next 12 months. It is to be hoped that more help will be forthcoming from the members of the Division to assist with the many little jobs which crop up than there has been in the last year, and not just the same few helpers every time as is usually the case.

Our lecturer at the March general meeting was John 7ZOO, who dealt mainly with voltage dependant capacitors and their application, finishing with a description of a three-band v.h.f. co-axial r.f. amp. built round a DET22 which he is in the process of building. A most interesting and informative lecture, thoroughly enjoyed by all present.

Welcome to Dave 7DG (ex-2DG) from this Division. I should have done this last month, but somehow it slipped me, however better late than never, eh? Also congrats. to Brian 7TX (ex-7ZTX) who gained his c.w. at the January examinations.

This year's Athol Johnson Memorial V.h.f. Contest held on the last week-end of February (27-28) saw 18 stations participating. The winner looks like being Reg 7RL who scored over 5,000 points. The highlight of the contest was the 432 Mc. QSO between Mt. Barrow (Reg) and Mt. Wellington (Geoff 7ZAS), a distance of 107 miles according to my calculations. This is the first North-South QSO on this band and an intrastate record.

Several stations are on the 432 Mc. band in Northern Tasmania, but so far only Dave 7ZAI and myself are on in the South; no doubt more will follow. Dave and I worked mobile out as far as Dysart (about 30 miles) with 5 x 9 plus signals both ways, and at present have our own private link on this band (have to move higher when anyone else comes up there.)

Reg 7RL had quite a day on the Sunday (28th) for apart from the 432 Mc. contact south, he worked several VK5s on 144 Mc. (including a W7 portable VK5) at Mt. Gambier, one of the VK5s being a mobile with a whip antenna in the township. Kevin 7ZAH also worked into VK5 from Stanley, using a halo on his mobile.

One of our senior members, who started back in the spark coil-coherer days (somewhere about 1908 I'm told), and who has kept abreast of things ever since, has now moved on to s.s.b. with a Galaxy V. Understand one of his first contacts was into Europe with an S8 report. In case you have not guessed who I mean, it is Rupe 7RM. Good to hear you back on Rupe, and I trust we'll continue to hear you about for a long time yet.

Our old friend, Bill 7YY, has been transferred to VK4 (Rockhampton to be precise) and he will certainly be missed down this way. A one-time councillor, Bill has always been a good worker for the Institute and his practical jokes and natural poetic flair have caused many a good laugh. However, our loss is VK4's gain. We hope to see you about down this neck of the woods again some day Bill, the best wishes of the Division go with you and yours to the Tropic of Capricorn.

The John Moyle Memorial National Field Day this year clashed **as usual** with the Royal Hobart Regatta, and this, together with the dreadful band conditions, were responsible for the very poor participation from Southern VK7 at least.

Terry 7CT, who has been in ill health for some time now, is at last on the mend. Although from what he tells me, it will be a long time before his pocket recovers. Still a wise old sage once said, money isn't everything, but it's way ahead of whatever is in second place. Better to be rich in health, Terry!

Ian 7ZZ has at last got himself a new second hand receiver, so watch out chaps, he'll be able to hear you better than ever now.

One final thought. If you have not paid your sub. yet, you are **unfinancial** and have been for a month, and soon you won't be getting this magazine. So pay up quick. **Do not procrastinate!** 73, 7ZAS.

NORTH-WEST ZONE

The field day held at Gravelly Beach on the River Tamar by the Northern Zone was voted a great success by all who attended. 80 mx whips and v.h.f. halos were everywhere. Among the N.W. Zone members noticed present (complete with XYLs and YLs) were: 7XL, 7SF, 7MX, 7KH, 7ZWN, 7ZAH and several associates. Two transmitter hunts were held on 144 Mc. and 80 mx and were enjoyed by all present. Who would have suspected that innocent-looking fisherman in the straw hat on the end of the pier was holding not a line, but an antenna. Nice work, Leigh. A good time was had by all.

The trophy for the annual cricket match was duly presented to the N.W. Zone and is at present being kept in safe custody by Syd 7SF.

Congratulations go to Bruce Kelly, who now has his ticket. Should not be long before Bruce is making his presence felt. Bob 7ZAA has worked into ZL on 6 mx and there has been considerable activity on v.h.f. here lately. Also a bit of 20 mx DX creeping through —heard and worked some Ws and CT1 station 5 x 9 on phone recently, so maybe the bands are picking up.

Don't forget to keep an ear out for Basil, ex-VK7BL, who is now VE3APO. He will be operating the university transmitter in a month's time, and will be anxiously looking for VK7s.

The Ladies' Night at the monthly meeting was voted a great success and the films and slides were appreciated. The ladies have been well catered for this month, so maybe we can get an extended leave pass into the shack without a guilty conscience. 73, 7KH.

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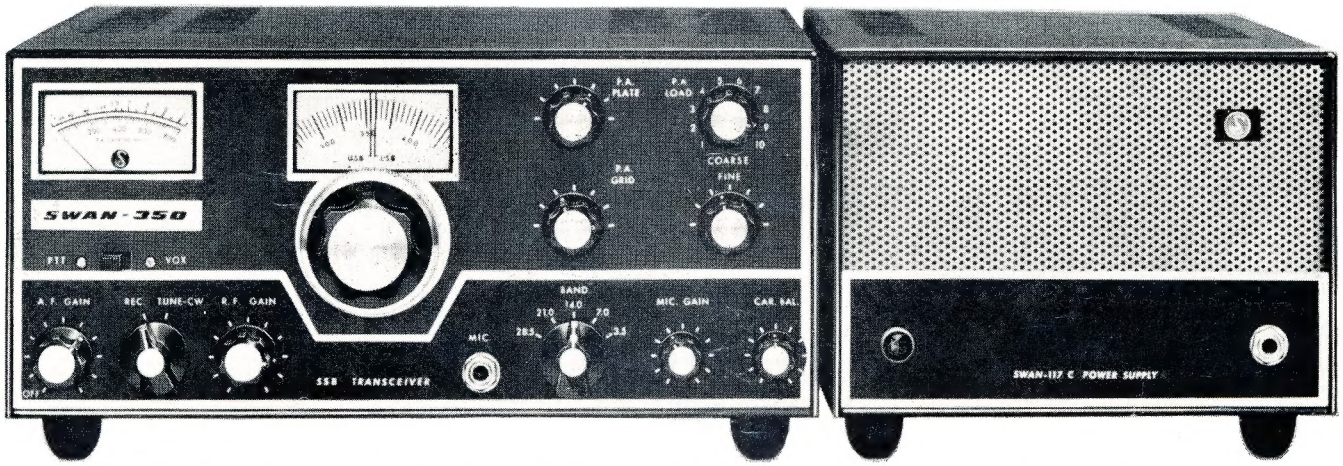

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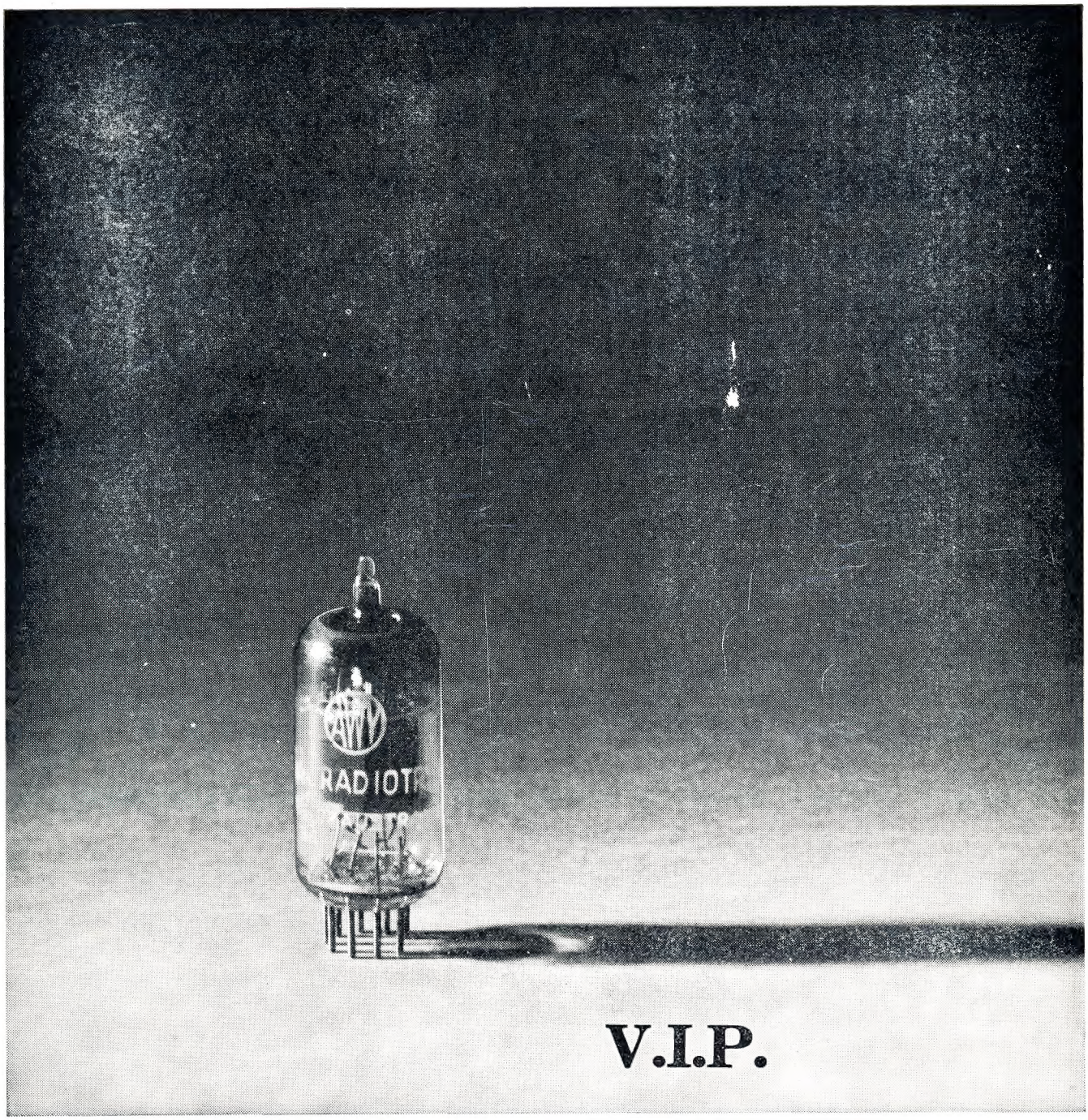

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